DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR 1987

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

NINETY-NINTH CONGRESS

SECOND SESSION

SUBCOMMITTEE ON THE DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES

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D. NEAL SIGMON, KATHLEEN R. JOHNSON, JOCELYN HUNN, and ROBERT S. KRIPOWICZ, *Staff Assistants*

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Printed for the use of the Committee on Appropriations

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DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR 1987

THURSDAY, FEBRUARY 20, 1986.

SECRETARY OF ENERGY

WITNESSES

JOHN S. HERRINGTON, SECRETARY OF ENERGY

MARTHA O. HESSE, ASSISTANT SECRETARY FOR MANAGEMENT AND ADMINISTRATION

DONALD L. BAUER, ACTING ASSISTANT SECRETARY FOR FOSSIL ENERGY

DONNA R. FITZPATRICK, ASSISTANT SECRETARY FOR CONSERVATION AND RENEWABLE ENERGY

ALVIN W. TRIVELPIECE, DIRECTOR, OFFICE OF ENERGY RESEARCH

ELIZABETH E. SMEDLEY, CONTROLLER

Mr. YATES. Ms. Reporter, show the hearing as coming to order.

This is a hearing on the Department of Energy's budget for fiscal year 1987. Appearing in support of the budget is the Secretary of Energy, Mr. John Herrington, who will be accompanied by a supporting witness, Ms. Martha O. Hesse, Assistant Secretary for Management and Administration.

Such biographies as are appropriate may go into the record at this point to be followed by a statement of deferrals proposed by the Department of Energy. Following that statement of deferrals, the record may receive a letter dated February 17 addressed to Secretary Herrington signed by Senators James McClure and Robert Byrd and myself and Congressman Regula.

[The biographies follow:]

JOHN S. HERRINGTON

On January 18, 1985, John S. Herrington was nominated by President Ronald Reagan to be the fifth Secretary of Energy. Mr. Herrington was confirmed by the United States Senate on February 6, 1985, and sworn into office on February 7, 1985.

Prior to joining the Department of Energy, Mr. Herrington served in the White House as Assistant to the President of the United States. Before assuming that post, he served as Special Assistant to the Chief of Staff, the White House, from February to May 1983. Mr. Herrington also served as Assistant Secretary of the Navy from October 1981 to February 1983. He was a member of the Reserve Forces Policy Board, the Military Manpower Task Force Working Group, the Department of Navy Review and Oversight Council, and Chairman of the Defense Department Per Diem Committee. For his service in the Department of Defense, Mr. Herrington was awarded the Distinguished Service Medal, the Department's highest civilian award. Mr. Herrington also served as Deputy Assistant to the President and Director of Presidential Personnel after he moved to Washington in January 1981.

Mr. Herrington was born in Los Angeles, California, May 31, 1939. he graduated from University High School, Los Angeles, California, in 1957. He is a graduate of Stanford University where he received his A.B. degree in economics in 1961. Mr.

Herrington received his LL.B. and J.D. degrees at the University of California, Hastings College of Law, San Francisco, California, in 1964. Mr. Herrington has been a practicing attorney in California since 1965 specializing in corporation, real estate, taxation, and business law. He also expanded his interests into real estate development, ranching, restoration of historic buildings, and other investment undertakings. Mr. Herrington has also served as a Deputy District Attorney in Ventura County, California, and a First Lieutenant in the United States Marine Corps Reserves.

Mr. Herrington is married to Lois Haight Herrington, Assistant Attorney of the United States. They have two daughters, Lisa Marie (age 19) attending the University of California at Los Angeles, and Victoria Jean (age 18) attending the University of Southern California. The Herringtons reside in McLean, Virginia.

MARTHA O. HESSE

Martha O. Hesse was named Assistant Secretary for Management and Administration, U.S. Department of Energy (DOE) on November 10, 1982, pursuant to a recess appointment granted by President Reagan. She was confirmed for the position by the Senate on December 8, 1982.

In this position, Ms. Hesse is the principal business officer and adviser to the Secretary. She has direct or oversight responsibilities for $22 billion a year and 135,000 government or contractor employees, including budget, personnel management, contracting and procurement and finance accounting. She is also a member of the President's Council on Management Improvement.

Before joining DOE, Ms. Hesse was Executive Director of the President's Task Force on Management Reform, located in the Office of Management and Budget.

From February 1981 until her White House assignment, Ms. Hesse was Associate Deputy Secretary of Commerce, where she provided direct support to the Deputy Secretary in administering the overall operations of the Department and resolved major policy and program operation issues that arose among the bureaus of the Department.

A prominent Chicago businesswoman, Ms. Hesse in 1969 become director and chief operating officer of SEI Information Technology in Chicago. As co-founder of this professional services company, she held key management positions and directed the company's business activities.

From 1966 to 1969, Ms. Hesse was Director of the Data Management Division, American Hospital Association. From 1964 to 1966, she was a research analyst with the Blue Shield Association.

Ms. Hesse attended the University of Iowa, majoring in psychology, and received an MBA (The Executive Program) from the University of Chicago in 1979. She currently serves as Vice Chairman of the Dean's Fund at the University of Chicago's Graduate School of Business.

DONNA R. FITZPATRICK

Donna R. Fitzpatrick was nominated by President Reagan on July 31, 1985, and confirmed by the Senate on December 19, 1985. She was sworn in as Assistant Secretary for Conservation and Renewable Energy, U.S. Department of Energy (DOE) on December 20, 1985. She had served as Acting Assistant Secretary since March 11, 1985, and as the Principal Deputy Assistant Secretary since January 1984.

In this position her responsibilities include management of research and development programs in energy efficiency and alternative fuels for industry, buildings, and vehicles. The programs in renewable energy resources involve research in active and passive solar, photovoltaic, wind, ocean thermal, geothermal, and biomass technologies. In addition, she administers federal grant programs for low-income home weatherization and energy efficiency improvements in schools and hospitals, and coordinates management of three of the five federal power marketing administrations.

In 1983, Miss Fitzpatrick served on a consultant team for the Secretary of Energy to conduct a general review of the Department's conservation and renewable energy programs, focusing on policy, program goals and priorities, budget levels, and new initiatives. In 1980, she served the Office of the President-elect as a member of the Transition Team for the National Science Foundation, reviewing national policy in basic science research, project efficiency, funding, and proposed legislation.

In her law practice, first with the Washington, D.C., firm of O'Connor and Hannan and then as a sole practitioner, Miss Fitzpatrick worked extensively on real estate development, helping to coordinate public and private interests and activities where Federal and District of Columbia involvement was required. This included work with local utilities and engineering planners to determine the legal, economic, and technical feasibility of various energy options, such as solar, cogeneration, and an on-site power generation and district heating system for large scale, high density residential and commercial uses.

Miss Fitzpatrick is also experienced in civil litigation, including administrative law and contracting issues.

Miss Fitzpatrick received a Bachelor's degree in physics cum laude from the American University in 1972. After teaching high school chemistry and mathematics, she entered law school and graduated from the National Law Center of George Washington University in 1980.

DONALD L. BAUER

Donald L. Bauer is the Department of Energy's Acting Assistant Secretary for Fossil Energy, a position he assumed on June 3, 1985. His responsibilities include management of coal, oil, and unconventional gas research and development programs as well as the Naval Petroleum and Oil Shale Reserves and the Strategic Petroleum Reserve. In addition, he is responsible for overseeing the Federal Government's involvement in the Great Plains Coal Gasification Project.

From February 16, 1982, until his present assignment, Mr. Bauer served as Principal Deputy Assistant Secretary for Fossil Energy. Previously he was the Acting Director of the Office of Coal Processing where he was responsible for developing and implementing the Federal Research and Development Program for Coal Liquefaction and Gasification.

Mr. Bauer assumed the position of Acting Deputy Program Director for Project Management in June 1981. He was responsible for assisting the Program Director in the design, siting, construction and operation of major coal liquefaction and gasification projects.

Mr. Bauer also served as Chief of Programs Support (Division of Fossil Fuel Processing), responsible for division budget development and execution, management information systems development and maintenance and program/project decentralization. He joined the Fossil Energy staff in 1976 as the Assistant Director, Major Facility Project Management where he was responsible for providing management direction for procurment of major coal conversion facilities.

From 1960 to 1975, Mr. Bauer held a wide range of positions with the Department of the Army where he gained managerial experience in anti-ballistic missile systems. His positions included: Engineering Consultant responsible for the systems development activities associated with an Advanced ABM/BMD Systems (Site Defense); Chief of the Missile Division, Ballistic Missile Defense Systems Command, involving responsibility for the design, development and testing of the SPRINT II and improved SPRINT II Missile Sub-System for the Site Defense System; Project Manager with the Advanced Ballistic Missile Defense Agency; Project Manager with the U.S. Army Missile Command and Missile Test Engineer and Project Engineer in the Army Rocket and Guided Missile Agency.

Mr. Bauer began his government career in 1958 immediately after graduating from Grove City College in Pennsylvania with a B.S. in Chemical Engineering. He served two years in the U.S. Army as a Missile Test Engineer in the Army Rocket and Guided Missile Agency, a position which he resumed as a civilian immediately after his discharge.

In 1983, President Reagan named Mr. Bauer as Meritorious Executive in the Senior Executive Service. Secretary of Energy Don Hodel conferred the Departmental Meritorious Service Award on Mr. Bauer in 1985.

Mr. Bauer was born in Lucinda, Pennsylvania, and currently resides in Falls Church, Virginia. He is married and has two children.

Mr. YATES. Mr. Secretary, your statement may go into the record at this point. We will be very pleased to hear what you have to say about the state of the Department of Energy.

SUMMARY STATEMENT

Secretary HERRINGTON. Thank you, Mr. Chairman.

Thank you for your patience for a momentary delay getting started here this morning. I have with me besides Assistant Secretary Martha Hesse, and our Assistant Secretary for Conservation and Renewable Energy, Donna Fitzpatrick.

Mr. YATES. Who?

Secretary HERRINGTON. Donna Fitzpatrick. She is testifying next door and will come over immediately to give detailed information on conservation.

We also have Don Bauer, who is the Fossil Energy Acting Assistant Secretary, as well as Alvin Trivelpiece, Director, Office of Energy Research.

We think we are prepared this morning to answer any questions you may have to the best of our ability.

We are proud to present this budget up on the Hill at this time. It has been a difficult time obviously.

This budget is lean. There have been a lot of choices made in it.

Mr. YATES. Lean or skeletal?

Secretary HERRINGTON. I would have to say lean and sharply focused.

Mr. YATES. Okay.

Secretary HERRINGTON. Obviously, Gramm-Rudman-Hollings has had a lot of impact on what we have done, meaning the $144 billion deficit target. I heard two days ago that it was called Gramm-Rudman now because even the Gramm-Rudman-Hollings had to take a cut.

Mr. YATES. One of these days, I suspect Rudman will drop his name.

Secretary HERRINGTON. I think this budget meets the administration's and the President's obligation for the $144 billion target. We are down to $12.1 billion, about one percent above fiscal year 1986 levels as adjusted for the sequester order on February 1st. I think the budget is fair. It is a balanced budget. It helps us to meet our targets and our jobs that are levied on us by the Department of Defense. It provides the agreed growth pattern in defense, the three percent real growth.

It applies Federal funds where they are most needed. We think it removes technological barriers to this Nation's needed resources. We think it continues the measured development of energy technologies for the future.

One of the most important things, I think it keeps open our direction in solving the nuclear waste problem. We continue our research in the fundamental constituents of the matter and energy and the basic forces of nature and finally, one of the programs that I think is most important this year, now, would be an effort to improve the safety, security, environmental protection and clean-up in this department's facilities.

You will see in this budget this year the new Assistant Secretary for Environment Safety and Health funded at a level of $47 million out of existing programs. This is something that has needed to be done for a period of time and I think we are off to a good start.

There are some special initiatives in the budget and I would like to mention them very briefly before we get into them. Some are new, some are not surprising, some may be surprising.

PRIVATIZATION OF NPR

I think the first one I would like to talk about is the privatization of Naval Petroleum Reserves Number 1 and Number 3 we are proposing.

Mr. **Yates**. Takes us back to Teapot Dome, doesn't it?

Secretary **Herrington**. It does, and it is something you remember and I remember over many years. There is no national security reason for the government to continue with the Naval Petroleum Reserves for several reasons. Today, as we are here, the Strategic Petroleum Reserve can pump oil out of the ground 30 times faster than the Naval Petroleum Reserves can. Strategic Petroleum Reserves today——

Mr. **Yates**. Well, you don't mind if I interrupt as we go along?

Secretary **Herrington**. No, sir.

Mr. **Yates**. Two thoughts come to mind. One is that I suspect there is much more oil in the Naval Petroleum Reserves than in the Strategic Petroleum Reserve and I don't know why since you can pump the oil out more rapidly from the Strategic Petroleum Reserve the same methods could not be utilized in the Naval Petroleum Reserves.

Secretary **Herrington**. Well, the Strategic Petroleum Reserve and the Naval Petroleum Reserves are of about the same magnitude. Due to transportation costs and supply availability—today, most defense petroleum needs are met from the open market, not from a dedicated source in the ground. They are bought from the open market.

Mr. **Yates**. It is only in time of emergency that there is no open market. That is why you have got a reserve in the ground within the United States. You don't have to be concerned about transportation from the Middle East, even from Mexico or from Canada, let alone from the far reaches of the world.

To me, the Naval Petroleum Reserves is as much a part of the national defense structure as our weapons system.

Mr. **Murtha**. I am with you, Mr. Chairman.

Mr. **Yates**. I am not sure Mr. Herrington isn't with us, too, but OMB has laid its heavy hand upon him. It suddenly occurs to me we will probably argue from here until next Tuesday unless I let you finish your statement and then I will discuss it with you.

Secretary **Herrington**. I am almost through. I am trying to keep my statement brief so we can get to the questions.

One point we can bring up while we are talking about Naval Petroleum Reserves, a lot of the United States Navy today uses nuclear power or gas turbine power. It is not the old bunker fuel Navy that we all remember from the 1930s, not quite the same.

Mr. **Yates**. You mean the coal Navy?

Secretary **Herrington**. Yes.

Mr. **Yates**. That is true. We made progress in both. Here I am talking again, but we made progress in both respects. We become an oil-burning Navy and then nuclear, but much of our fleet is not nuclear; is it?

Secretary **Herrington**. No, it is not. That is correct.

Mr. **Yates**. What about your freight vessels and your supporting vessels?

Mr. MURTHA. How about the Marine Corps, Mr. Chairman? The Marine Corps does not use any nuclear vehicles.

Mr. YATES. We still don't have a nuclear Air Force, do we?

Mr. MURTHA. That is right.

Mr. YATES. Go ahead, Mr. Secretary. You can see you are going to have fun today.

Secretary HERRINGTON. I would like to talk about the Strategic Petroleum Reserve in detail.

Mr. YATES. We would love you to.

SPR MORATORIUM

Secretary HERRINGTON. All right. Our budget also proposes an indefinite moratorium on further development of the Strategic Petroleum Reserve. We will be at about 500 million barrels in the next 60 days based on what we have allocated and what we can spend. Under terms you all considered about four or five years ago, that is about 120 days of net U.S. oil imports. That was the target this administration and the Congress set when you argued in the late seventies about what would be an adequate national insurance policy.

It can be said that we should continue to fill the Strategic Petroleum Reserve at this time because of the falling prices. I think the proposal we are putting forward is a balance between deficit reduction and what we can afford to spend in this program.

Mr. YATES. That is always a good fall-back; isn't it?

Secretary HERRINGTON. It is important.

Mr. YATES. It is the truth, but it is always a good fall-back, too.

COOPERATIVE R&D VENTURES

Secretary HERRINGTON. Yes. I think the moratorium can be reassessed as economic conditions and world oil markets change. I think we can all watch that. We will try to leverage scarce Federal funds for research and development by taking minority positions with industry under this new budget.

Several things can happen this way. Cooperative research and development ventures with industry will not only increase the impact of Federal funds, but it will improve the technology transfer in our programs. In 1987, we are proposing in the fossil energy program to undertake a cooperative research and development venture pilot program with private industry. In our conservation and solar programs we would like to investigate the possibility of similar programs with industry.

BUDGET PRIORITIES

Budgetary constraints require us to limit support to only the highest priority projects and programs whose success will serve the national interest. This policy has resulted in our withdrawing support from a number of activities deemed to have lower priority, deferring the funds saved and using them to reduce the need for new budget authority for more worthy activities in 1987. The current fiscal situation gives us no choice but to concentrate scarce resources where they show promise of bringing the greatest benefits.

The effects of this policy are most notable in the fossil energy and conservation research and development areas. Even though funding levels are significantly reduced from fiscal year 1986 levels, we believe that they are adequate and are being directed to the highest priorities.

A significant feature of this budget compared to fiscal year 1986 is the withdrawal of further Federal support of conservation grant programs. The states are the recipients of very large sums received in restitution for violations of oil price regulations.

These sums are available for conservation activities, and we feel additional Federal support is unnecessary.

In closing, I want to emphasize this budget builds on a foundation of energy stability and security we have laid during the last five years. Thank you.

[The statement of Secretary Herrington follows:]

Statement of John S. Herrington
Secretary of Energy
Before the
Committee on Appropriations
Subcommittee on Interior and Related Agencies
U.S. House of Representatives

Mr. Chairman and Members of the Committee, I appreciate the opportunity to present the FY 1987 budget for the Department of Energy. This budget supports the major themes of this Administration and is fully responsive to the requirements of the historic Gramm-Rudman-Hollings Balanced Budget and Emergency Deficit Control Act. It is a lean, trim, and sharply focused budget, which provides adequate funds for essential activities in the Department's three primary mission areas of Energy, General Science, and Defense. Before discussing details of the budget itself, I would like to describe the current energy situation and the Department's policy and budget initiatives.

CURRENT ENERGY SITUATION

Energy problems are no longer a destabilizing force in the national life and economy. The attempts by the OPEC cartel to limit production and control prices have failed. Real crude oil prices are down some 40 percent since early 1981, and are projected to decline further. The Nation is using its energy supplies more efficiently than ever before. Total U.S. energy production for the past two years has been at record high levels, and net oil imports are one-third less than they were in 1980.

This greatly reduced level of imports, the excess oil production capacity worldwide, and the almost 500 million barrels of crude oil in our Strategic Petroleum Reserve, serve to reduce substantially the likelihood of a major supply disruption.

Nevertheless, despite the favorable current situation we must not become complacent. We must use this respite to plan for a strong, secure energy future in an atmosphere of calm resolve.

POLICY AND BUDGET INITIATIVES

The Administration's overall energy goal is an adequate supply of energy at a reasonable cost. We can achieve that goal through the combination of energy stability, energy security, and energy strength. Energy stability has been achieved over the past five years. Our energy security is growing stronger day by day. Our objective for the immediate future is to build this Nation's energy strength, making full use of its vast natural resources and the daring and ingenuity of its citizens. Our approach includes removing technological and institutional barriers to increased use of coal and nuclear power, opening the Outer Continental Shelf to responsible hydrocarbon production, and eliminating the remaining price controls on natural gas. At the same time, we will continue to support advances in conservation as well as possible energy sources of the future such as magnetic fusion.

Some of these initiatives require budgetary resources, but many do not. The President's decontrol of oil in January 1981, required only the stroke of a pen, yet nothing has done more to put this Nation back on the right energy track. Reforming the nuclear licensing process and permitting all gas to sell at market rates would have a negligible budgetary impact, but would have immense, long-lasting benefits. Federal funding for appropriate activities can help us to reach our energy goal, but Federal funds are in short supply.

Deficit reduction is perhaps the preeminent domestic economic imperative today, and the Department fully recognizes that fact. For this reason, we are doing all we can to concentrate increasingly scarce resources on those programs and projects that directly fulfill a responsibility of the Federal government and truly require Federal assistance. If we are to achieve our overriding goal of deficit reduction we cannot afford to continue to allocate scarce Federal resources to activities where the rationale for continued Federal involvement is weak, and where State and local organizations or private industry can and should take over responsibilities presently borne by the Federal government. Also, we cannot permit programs or projects to continue with Federal support unless they meet a high priority national need.

These policies are evident in the FY 1987 budget for the Department of Energy. Among the major initiatives are the privatization of the Federal interest in Naval Petroleum Reserves No. 1 and No. 3 and the defederalization of the Power Marketing Administrations. There is no national security reason for the government to continue to run the Naval Petroleum Reserves today, almost seventy five years after they were established. They have not been true reserves since 1976, when Congress determined that the Reserves should be produced at their maximum efficient rate and the output sold.

Similarly, the Power Marketing Administrations principally perform electric utility functions which are not fundamentally Federal in nature. We believe non-Federal entities could perform the same services with equal or greater efficiency and be subject to local and regional control, as is true for most of the electric power now sold in the Nation.

Another new initiative in the FY 1987 budget involves cooperative research and development ventures with private industry consortia. Our Fossil Energy organization will conduct a pilot program in FY 1987 and the Conservation and Solar technology areas will investigate similar venture partnerships with industry. The use of cooperative research and development ventures should serve to concentrate resources on research and development activities that more broadly support industry, promoting more effective technology transfer and providing better leveraging of scarce Federal resources.

Our rigorous attempt to limit Federal support in FY 1987 to only the highest priority projects and programs whose success will serve the national interest has implications for FY 1986 as well. This policy has resulted in our withdrawing support from a number of activities deemed to have lower priority, deferring the funds thus saved, and using them to reduce the need for new budget authority for more worthy activities in FY 1987. We have no choice under the current and necessarily strict fiscal regimen but to concentrate scarce resources where they show promise of bringing the greatest benefits.

The budget proposes an indefinite moratorium on further development of the Strategic Petroleum Reserve (SPR) and a cessation of fill later this year when 500 million barrels of crude oil will be in storage. The SPR represents a wholly adequate "insurance policy" given the current energy situation, and, in fact, achieves the level of protection envisioned by Congress when it established the program. The moratorium will be reassessed as economic conditions and the world oil market conditions change.

The Environment, Safety and Health functions have been centralized and expanded, with greatly increased funding for oversight and planning activities under the direction of the new Assistant Secretary. This underscores the Department's commitment to give high priority to public and worker health and safety in our operations. Similarly, the Department will direct increased funding to another area of priority concern, which is upgrading safeguards and security at the Department's facilities.

With this as introduction, let me turn now to the major elements of the Department's FY 1987 budget.

Budget Overview

The FY 1987 budget for the Department of Energy is $12.1 billion, which is $400 million below last year's request and about one percent above the FY 1986 funding levels as reduced by the President's Sequester Order pursuant to the deficit reduction legislation. Outlays are anticipated to be approximately $12.5 billion. Within the $12.1 billion request the Department has sought to maintain the priorities and budget strategies which have characterized the Department's budgets since the advent of this Administration. These include a concentration on longer-term research and development leading to a balanced and mixed energy resource base, and a withdrawal from continued efforts in more mature technologies, where responsibility for further development should rest with the technology's private sector sponsors.

As mentioned above, legislation is being proposed to permit the transfer of Federal control over the Naval Petroleum Reserves No. 1 and No. 3 and the Power Marketing Administrations. However, pending Congressional approval of these proposals, full funding for these organizations in FY 1987 is included in the budget. Other legislative initiatives associated with this budget would modify the Federal investment repayment practices of the Power Marketing Administrations, without changing interest rates on past investments.

The Department's budget is presented in six categories. Each category groups activities which share common characteristics. The FY 1987 budget for Research and Development is about 7 percent below the FY 1986 level when amounts of new budget authority are compared. However, the level of actual program activity is higher, as FY 1987 will benefit from large sums of unobligated budget authority carried over from FY 1986 and made available for program use. Most of these unobligated balances will result from savings due to cost reductions in the Uranium Enrichment program, primarily the termination of the Gas Centrifuge Enrichment Plant.

Comparing funding levels within the Research and Development category at the level of actual program activity, increases in high energy and nuclear physics, environmental activities, supporting research, weapons research and development, and Naval reactors more than offset reductions to fossil, conservation, solar, nuclear energy and magnetic fusion programs.

Defense Production and Support, $4.8 billion, increases by $498 million from FY 1986, due to increased requirements from the Department of Defense for weapons systems, and for special nuclear materials for use in weapon systems and by the nuclear Navy.

The budget request for Waste Activities, $1.8 billion, is 30 percent greater in FY 1987 than FY 1986, with increases in all major program elements; the Nuclear Waste Fund, Remedial Action and Waste Technology, and Defense Waste Management.

The budget request for Business Enterprises is $691 million. Funding requirements for Business Enterprises are about 20 percent lower than in FY 1986. In addition to the uranium enrichment enterprise and the Strategic Petroleum Reserve, this category includes the Naval Petroleum Reserves and the Power Marketing Administrations, which the Administration will actively seek to transfer to non-Federal control. However, the budget includes full funding for these activities through FY 1987 to assure continuity of operations.

The Grants and Other Energy Functions category has a budget request well below the FY 1986 level, due primarily to the withdrawal of direct appropriations for State energy conservation grant programs. These programs will be able to rely on large sums made available to the States in restitution for petroleum pricing and allocation violations.

Departmental Management, which includes management and support functions in Washington and the field, is almost unchanged from FY 1986.

I would now like to discuss the budgets for selected program areas.

GENERAL SCIENCE

The budget request for the General Science appropriation in FY 1987 is $773 million, an increase of almost 18 percent over last year. The General Science account includes the High Energy Physics and Nuclear Physics programs, which are a major part of the National effort to identify the basic constituents of matter and the basic forces in nature.

A major feature of the High Energy Physics program in FY 1987 will be the first research operation of two major colliding beam facilities--the Tevatron proton-antiproton facility at Fermilab and the Stanford Linear Collider, an electron-positron collider, at the Stanford Linear Accelerator Center.

The highest priority for new construction in basic nuclear research is the Continuous Electron Beam Accelerator Facility at Newport News, Virginia. Construction will be initiated in FY 1987 for this unique, world-class facility.

The FY 1987 program also provides funding for research and development on superconducting magnets and systems related to the next generation particle collider. The results of prior research and development in this area will provide the technical information for Departmental review of a Superconducting Super Collider-type facility.

ENVIRONMENT

I have continued to stress the importance of environmental concerns at the Department, and the FY 1987 budget request reflects this theme. The funds requested for environmental compliance activities throughout each of the Department's program areas as well as for the Environment, Safety and Health program area have increased this year. The Department's programs are formulated in a manner that balances research and development and production requirements with the need to protect the environment. Funding for the Environment, Safety and Health program, which increases by almost 95 percent over the FY 1986 level, will support the key elements of the Department's long-range plan which provides for a strong emphasis on environmental and safety matters at DOE facilities.

The Department is conducting a baseline survey of all facilities to identify existing areas of environmental risk. Results from the survey will be used to prioritize areas requiring corrective action. We are committed to developing standards for environmentally sound operations at all DOE facilities.

OTHER ENERGY RESEARCH

This category includes Magnetic Fusion, Biological and Environmental Research, and Basic Energy Sciences.

The Magnetic Fusion budget of $333.0 million in FY 1987 is about 9 percent below FY 1986. Our focus this year will be on the development of the toroidal magnetic confinement system. The program has been structured to maintain the highest priority tasks, improve the cost effectiveness of facility operations, and increase the use of international collaboration. We have always stressed international collaboration in fusion research, and will be emphasizing this even more in light of the agreements reached at the Geneva Summit.

We are proposing a budget of $197 million for Biological and Environmental Research in FY 1987, which is an increase of 9 percent over FY 1986. This program represents the Nation's only long-term research effort specifically focused on energy-related health and environmental issues. The FY 1987 program will continue its focus on understanding the long-term health and environmental effects of radiation and energy-related chemicals. This program also performs research on such issues as acid rain and the so-called "Greenhouse effect."

The mission of the Basic Energy Sciences (BES) program is to perform generic, long-range, energy-related research in both nuclear and non-nuclear fields. The FY 1987 budget request of $441 million is slightly above last year's effort. In conducting this program, we support energy-related research and operate research facilities in the physical and biological sciences, engineering, applied mathematics, and geosciences. In FY 1987 funds will continue the construction of the Center for Advanced Materials at the Lawrence Berkeley Laboratory, and support upgrades of the National Synchrotron Light Source at the Brookhaven National Laboratory and the Synchrotron Radiation Laboratory at the Stanford Linear Accelerator Center.

FOSSIL ENERGY

The Fossil Energy program is directed at establishing the scientific and engineering foundation to support private sector efforts to develop and deploy fossil fuel technologies. The budget request of $150 million concentrates adequate resources on high priority activities in coal, petroleum and gas technologies. Clean use of coal is the principal focus of our fossil program, and we will continue work in liquefaction, gasification, combustion systems, fuel cells, heat engines, and techniques for the direct combustion of coal in an environmentally sound manner.

The budget request is divided into three functional elements: Technology base development funds will provide direct support for basic, fundamental and crosscutting research through contracts and research grants directed principally to national laboratories, Energy Technology Centers, and universities. Applied research and development activities will be funded with industry using various contractual instruments. Finally, a cooperative research and development venture pool of $12.5 million will be established to fund applied research and development joint ventures with industry consortia. It is expected that the Department would take minority positions in these ventures, which would leverage scarce Federal resources and provide for more active technology transfer.

In addition to activities supported by the budget request, the Department will begin a 3 year Clean Coal Technology program this year, utilizing $397.6 million of previously appropriated funds. A solicitation for competitive proposals was issued on February 17, 1986. Projects will be cost-shared up to 50 percent by the Federal government, and will be selected by August 1, 1986.

RENEWABLE ENERGY

The focus of the Solar and Other Renewable Energy program in FY 1987 is on supporting research and development that will strengthen the technology base on which industry can draw in developing future new products and processes for the commercial market. The program supports activities ranging from basic research in universities and national laboratories to applied research and development and proof-of-concept projects in industrial firms.

Our budget request of $92 million continues program activities in each major solar and renewable technology area, but at levels below FY 1986. Reductions proposed in the 1987 budget will limit support to only the highest priority activities. We are also pursuing a new funding approach for applied, but pre-competitive, technology development involving partnerships with industry. Cooperative research and development ventures will be investigated, and expressions of interest will be solicited from industry. We believe that the use of cooperative research and development ventures will be an effective method of leveraging limited Federal resources, and has the additional advantage of promoting more effective technology transfer to the private sector.

CONSERVATION

The Department views conservation as an energy resource and its practice has made important contributions to the Nation's improved energy posture. The emphasis of the Energy Conservation Research and Development program is to assist the private sector by conducting research targeted at expanding the technology base upon which industry can draw in developing new products and processes for the marketplace. Although the FY 1987 budget request of $71 million is substantially less than this year's level, we believe that we are directing adequate funding to the highest priority activities.

We will continue efforts in all of our current research and development areas such as buildings and community systems, industrial and transportation conservation, and advanced concepts in energy conversion and utilization. In addition, the new cooperative research and development approach will be explored and expressions of interest will be solicited from the private sector regarding their participation.

The budget request proposes no further Federal support for the Conservation Grants programs, except for a small amount in FY 1987 to fund the orderly close-out of Federal responsibilities. We believe that the States should assume responsibility for these activities. They will be able to make use of very large sums specifically designated for conservation and other energy-related activities which will be made available to them in restitution for oil pricing and allocation violations. Continued use of appropriated Federal funds for these programs is, therefore, no longer necessary.

NUCLEAR ENERGY

The emphasis of the Department's Nuclear Energy programs in FY 1987 is being shifted to ensure that nuclear energy contributes to civilian needs for a balanced and secure domestic energy base as well as emerging military needs to meet national security objectives. The budget request of $333 million, is slightly below the FY 1986 level. However, we have structured a program to coincide with the anticipated timing for commercial deployment of advanced reactors beyond the light water reactor, and which also meets increasing space and defense nuclear energy requirements. This essential program fits within the limited resources available during times of budgetary constraints.

The Light Water Reactor program will continue with emphasis on supporting a process leading to enhanced safety, rationalized licensing, and certification of advanced designs. These cost-shared activities are closely coordinated with industry and complement industry's own efforts.

The primary emphasis in advanced reactor research and development is to support national security requirements, including the Strategic Defense Initiative. We expect that benefits will accrue from this research and development that can be applied to future commercial reactor development efforts.

DEFENSE ACTIVITIES

The Department's FY 1987 budget request for Atomic Energy Defense Activities is $8.2 billion. The request meets the requirements of the Department of Defense for weapons production and deliveries. It also includes research on new and improved weapons, testing, production of special nuclear materials, and Naval reactors development.

Weapons research, development, and testing is a large portion of the defense programs budget at $2.1 billion. This includes weapons design, advanced weapon technology, support for the Strategic Defense Initiative, the testing of new weapons, and monitoring and testing of the nuclear weapons stockpile to assure continued reliability and effectiveness.

Weapons production and the production of special nuclear materials are funded at $2.5 billion and $2.0 billion, respectively. The Department's defense production activities respond to the requirements of the Defense Department and the need to modernize the Nation's defense force structure. In FY 1987 we will have eight weapons in production and pre-production efforts will be conducted on another 11 systems.

Within the Atomic Energy Defense appropriation, we also fund the Naval Reactors Development program which designs, develops, tests, and ultimately disposes of naval nuclear propulsion reactor components and cores. The FY 1987 budget is $594 million, up from $536 million in FY 1986. This increase is due primarily to increased research and development on an Advanced Fleet Reactor and for increased servicing requirements for the eight land-based prototype reactors.

WASTE ACTIVITIES

The safe management and disposal of civilian and defense nuclear waste and cleanup of contaminated facilities have long been prominent elements of the Department's nuclear and defense programs. These programs involve various types of high and low-level waste originating from civilian and defense sources. The budget request for each of these programs has increased in FY 1987.

The Nuclear Waste Fund activities are budgeted at $769 million, a significant increase over FY 1986's $499 million. These funds are directed toward disposal of spent nuclear fuel and high-level radioactive waste in mined, geologic repositories, and the study of monitored retrievable storage.

The Fund is financed by fees collected from owners and generators of spent fuel high-level waste. The increased FY 1987 request will provide for extensive site characterization, continued exploratory shaft design and construction, and intensive engineering tests and analyses required for the first repository. The program is progressing toward initial operation in 1998. The FY 1987 budget also provides support for the continuation of preliminary field investigations and design for a possible second repository. Twelve potentially acceptable second repository sites were proposed in January.

The Department also has two other program areas in which radioactive wastes are treated, stored, or prepared for ultimate disposal. The Defense Waste Management program provides for the interim storage of radioactive wastes generated throughout the DOE complex during the production of special nuclear materials used in the defense production facilities. A highlight of this program in FY 1987 is the continued construction of the Defense Waste Processing Facility at the Savannah River Plant, and the Waste Isolation Pilot Plant at Carlsbad, New Mexico. The Remedial Action program objective is to treat or stabilize radioactive waste and clean up contaminated DOE and certain non-government facilities and sites. The budget in FY 1987 is $294 million, an increase of 28 percent over FY 1986. This increase will maintain the schedule for cleaning up high priority sites throughout the country.

STRATEGIC PETROLEUM RESERVE

The Department intends to continue filling the Strategic Petroleum Reserve (SPR) in FY 1986 until the inventory reaches a level of 500 million barrels, in compliance with current law. No additional oil purchases are planned for FY 1987. Given the current world energy environment, the SPR inventory is more than adequate for use in the event of a supply disruption. In light of this decision, continued creation of storage capacity is unnecessary at this time. Therefore, we are planning to curtail certain development activities during FY 1986 to reduce near-term federal spending for facilities which are not presently required. Funding for these activities is being deferred and proposed for use in FY 1987 for standby operations and maintenance. As a result, no new appropriations are requested. This moratorium on development and suspension of fill of the SPR will be reassessed as economic and oil market conditions change.

URANIUM ENRICHMENT

The budget request for uranium enrichment is $1.3 billion, down slightly from FY 1986, and is offset by revenues of the same amount. During the last year, we have taken strong actions to revitalize this country's uranium enrichment business. We have streamlined the program, reduced costs, and reduced prices to customers, thus demonstrating our ability to compete in the world market. Through several creative marketing initiatives, the U.S. share of the free world enrichment market increased from 46 percent in 1985 to an estimated 53 percent in 1990. This will result in additional revenues of over $500 million during 1987 - 1990. We are confident that we can get our prices into the world competitive range using the existing gaseous diffusion capacity.

To ensure more efficient commercial deployment of advanced enrichment technology, the Department intends to transfer the development and ultimate deployment of the Advanced Vapor Laser Isotope Separation (AVLIS) process to the private sector.

In FY 1987, we are also proposing to begin repayment of the unrecovered Federal investment in the uranium enrichment program. The total Federal investment to be repaid is $3.5 billion. In FY 1987, $235 million in revenue collections will be returned to the Treasury.

NAVAL PETROLEUM AND OIL SHALE RESERVES

A major initiative will be undertaken to privatize the Naval Petroleum Reserves in FY 1987. Legislation authorizing the sale of the federal interest in Reserves No. 1 (Elk Hills) and No. 3 (Teapot Dome) will be submitted this fiscal year with the intent of conducting the sale as promptly as possible, probably in FY 1987. The government's role, which has changed from maintaining the Reserves for national security reasons to producing them at their maximum efficient rates and selling their output competitively, is better fulfilled by private industry. In the interim, the Department will continue to develop, operate and produce the Reserves until the sales are completed. The amount requested for FY 1987 will fund the Naval Petroleum and Oil Shale Reserves for the entire year. Once the sales take place, a rescission of any remaining budget authority will be proposed.

POWER MARKETING ADMINISTRATIONS

There are two major initiatives affecting the Power Marketing Administrations in FY 1987: defederalization and modification of repayment practices.

We will pursue defederalization through an open and competitive process. The goal will be to seek a fair return to the Federal taxpayers from the defederalization of these assets, while recognizing the benefits currently enjoyed by existing customers, and recognizing and providing appropriate protections for the personnel benefits of Federal employees. Before implementation of this proposal, the views of concerned groups and individuals, including appropriate Congressional Committees, State and local officials, current customers, the financial community, and public power and private sector energy interests will be considered.

Funds are included in the budget for operating the power marketing administrations in 1987, but we will actively seek to defederalize these utility systems. We expect that all five PMAs will be transferred from federal control by 1991. In the interim, the Department is proposing to modify the PMA capital investment repayment process legislatively to protect the interest of the taxpayers. These modifications require repayment of the unpaid balance of the original federal investment at a level not less than would be required under a fixed, straight-line amortization schedule for each power investment financed by appropriations and placed in service. The impact of this proposal is relatively modest.

Mr. Chairman, I believe that the budget I have summarized meets the Department's responsibilities in its several mission areas in a manner which recognizes today's fiscal responsibilities and tomorrow's anticipated needs.

Mr. **Yates**. All right. Thank you for your statement.

DEFERRAL POLICY

The first question that comes to mind relates to your deferral policy. I don't understand why, after the Congress rejected the deferrals that you sent to the Congress relating to the 1986 budget, you come back and you have the same, almost exactly the same, deferrals that you had in 1986.

Do you propose as a result of this kind of procedure to undertake the kind of impoundment that used to mark the efforts of previous Executive Branches to try to hold up expenditures on programs that the Congress had approved?

Secretary **Herrington**. No, sir, we do not.

Mr. **Yates**. But here are the deferrals that you presented to the Congress, a list of which I have put into the record.

[The information follows:]

2/4/86

Department of Energy
Proposed FY 1986 Deferrals
(Dollars in Thousands)

Energy Supply R&D		
Solar Energy		
Photovoltaics	$ 4,019	
Wind Energy	10,240	
Ocean	1,436	
International Solar	762	
Solar Program Support	195	
Subtotal, Solar	$16,652	
Renewables		
Electric Energy Systems	1,914	
Energy Storage Systems	1,914	
Geothermal	2,871	
Subtotal, Renewables	6,699	
Subtotal, Solar and Renewables		$ 23,351
Basic Energy Sciences		38,489
Energy Applications (In-House Energy Mgmt.)		3,923
Subtotal, Energy Supply R&D		65,763
Departmental Administration		393
Energy Conservation		
Buildings and Community Services		3,500
Industry		7,361
Transportation		8,836
Multi-Sector		713
Facility - Northwestern Univ.		9,816
Other FY 1985 Unobligated Balances		6,556
Subtotal, Energy Conservation		36,782
Uranium Enrichment		
Terminate GCEP	434,757	
Reduced ORGDP Costs	149,401	
Subtotal, Uranium Enrichment		584,158
Fossil Energy		
Control Tech., & Coal Prep.	4,874	
Advanced Res. & Tech. Dev.	2,096	
Coal Liquefaction	6,330	
Combustion Systems	951	
Fuel Cells	22,056	
Heat Engines & Heat Rec.	1,428	
Magnetohydrodynamics	13,130	
Surface Coal Gasification	8,008	
Oil Shale	2,856	
Program Direction	476	
Unobligated & Prior Year Deob.	4,681	
Subtotal, Fossil Energy		66,886
Naval Petroleum Reserve		36,461
Power Marketing Administrations		
Alaska Power Administration	400	
Southwestern Power Admin.	13,243	
Southeastern Power Admin.	2,089	
Western Area Power Admin.	43,466	
Subtotal, Power Administration		59,198
Strategic Petroleum Reserve		
On-budget (facilities)	197,941	
Off-budget (oil purchase)	577,534	
Subtotal, Strategic Petroleum Res.		775,475
Total, Proposed FY 1986 Deferrals		$1,625,116

Department of Energy
FY 1986 Deferrals

(Dollars In Thousands)

Appropriation	Deferred	Add-On	Explanation
Energy Supply R&D			
Renewables			
o Solar Energy -Photovoltaics	$ 4,019	$ 4,019	
	(1,914)	(1,914)	Deferral of funding for operation of the residential experimental stations at Austin, Texas.
	(957)	(957)	Deferral of funding for the Massachusetts Photovoltaic Center.
	(1,148)	(1,148)	Deferral of funding for other photovoltaic R&D not specifically identified in Committee Report language but added above the President's Request.
-Wind	10,240	10,240	Deferral of funding for the MOD-5 Wind machine.
-Ocean	1,436	1,436	Deferral of funding for two 50kW apparatus tests under the PICHTR open-cycle projects.
-Solar International	762	957	Deferral of funding for support to DOC for promotion of U.S. solar products for export purposes.
-Solar Program Support	195	---	Deferral of funding needed for contractual support.
Subtotal, Solar Energy	$16,652	$16,652	

Department of Energy
FY 1986 Deferrals

(Dollars In Thousands)

Appropriation	Deferred	Add-On	Explanation
o Electric Energy Systems	1,914	1,914	Deferral of funding for systems technology to advance the state-of-the-art in electric system concept and technologies.
o Energy Storage Systems	1,914	1,914	Deferral of funding for zinc/bromine battery work.
o Geothermal	$ 2,871	$ 2,871	
-Hydrothermal Industrialization	(1,914)	(1,914)	Deferral of funding which would assist States with significant hydrothermal resources to continue programs to exploit this resource.
-Geopressured Resources	(957)	(957)	Deferral of funding for continued analysis of long-duration flow test data from design wells.
o Technical Information Management Program (TIMP)	$ 3,923	$ ---	Deferral of funds from FY 1986 to offset on-going requirements in FY 1987. These funds are reprogrammed from the In-House Energy Management Program in FY 1986. Reprogramming request will accompany the FY 1987 budget to Congress.

FY 1987 Deferrals
(Budget Authority in Thousands)

Appropriation	Deferred	Explanation
Energy Supply Research & Development		Deferral of six university facility projects added by Congress in FY 1986. Funds will be used to finance FY 1987 Energy Supply Research and Development appropriations.
Basic Energy Sciences		
- National Center for Chemical Research (Columbia Univ.)	$ 7.7	
- Advanced Science Center (Univ. of Oregon)	8.2	
- Center for Science and Technology (Atlanta Univ.)	4.3	
- Energy and Mineral Research Center (Univ. of Alabama)	7.7	
- Center for Energy and Biomedical Technology (Tulane Univ.)	5.8	
- Demonstration Center for Information Technologies (Brown Univ.)	4.8	
	$ 38.5	

Department of Energy
FY 1986 Deferrals

(Dollars In Thousands)

Appropriation	Deferred	Add-On	Explanation
Departmental Administration			
-Office of Minority Economic Impact	$393	$957	Deferral of funds into FY 1987 will allow continuation of programs initiated in FY 1986. The program pace will be constant in FY 1986 and FY 1987.

Department of Energy
FY 1986 Deferrals
(Dollars in Thousands)

Appropriation	Deferred	(Add-On)	Explanation
Uranium Enrichment Activities:			
Diffusion Operation	$ 149,401	-0-	Savings as a result of current and prior year power cost savings and from putting ORGDP in stand-by in FY 1986.
Gas Centrifuge Enrichment Plant	434,757	-0-	FY 1986 Appropriation of $327,057,000 and prior year deobligations of $107,700,000 resulting from termination of GCEP.
Total	$ 584,158	-0-	

Department of Energy
FY 1986 Deferrals

(Dollars In Thousands)

Appropriation	Deferred	Add-On	Explanation
Alaska Power Administraton			
FY 1985 Unobligated Balances	$ 400	$---	Deferral of funding of these FY 1985 unobligated balances. There is no significant programmatic effect of withdrawal of these funds from FY 1986.
Total, Alaska Power Administration	$ 400	$---	

Department of Energy
FY 1986 Deferrals

(Dollars In Thousands)

Appropriation	Deferred	Add-On	Explanation
Southeastern Power Administraton			
FY 1985 Unobligated Balances	$2,089	$ ---	Deferral of funding of these FY 1985 unobligated balances. There is no significant programmatic effect of withdrawal of these funds from FY 1986.
Total, Southeastern Power Administration	$2,089	$ ---	

Department of Energy
FY 1986 Deferrals

(Dollars In Thousands)

Appropriation	Deferred	Add-On	Explanation
Southwestern Power Administraton			
FY 1985 Unobligated Balances	$13,243	$ ---	Deferral of funding of these FY 1985 unobligated balances. There is no significant programmatic effect of withdrawal of these funds from FY 1986.
Total, Southwestern Power Administration	$13,243	$ ---	

Department of Energy
FY 1986 Deferrals

(Dollars In Thousands)

Appropriation	Deferred	Add-On	Explanation
Western Area Power Administraton			
FY 1985 Unobligated Balances	$43,466	$ ---	Deferral of funding of these FY 1985 unobligated balances. There is no significant programmatic effect of withdrawal of these funds from FY 1986.
Total, Western Area Power Administration	$43,466	$ ---	

Department of Energy
FY 1986 Deferrals

(Dollars In Thousands)

Appropriation	Deferred	Add-On	Explanation
Energy Conservation			
o Buildings & Community Systems	$ 3,500	$ 3,500	
-Community Systems	(1,902)	(1,902)	Deferral of funding for the Urban Consortium.
-Technology & Consumer Products	(1,332)	(1,332)	Deferral of funding for R&D on thermally activated heat pumps and R&D on mercury isotope lighting.
-Buildings Systems	(95)	(95)	Deferral of funding for R&D on windows and daylighting building technologies.
Program Direction	(171)	(171)	Deferral of funding for staffing costs, however, funding will be provided, if needed, to support full employment under the staffing floors.
o Industry	$ 7,361	$ 7,361	
-Process Efficiency	(7,135)	(7,135)	Deferral of funding for the Steel Initiative. FY 1987 appropriation language would allow the use of these funds unrestriced in FY 1987 since the add-on was written into FY 1986 appropriation language.
-Program Direction	(226)	(226)	Deferral of funding for staffing costs, however, funding will be provided, if needed, to support full employment under the staffing floors.

Department of Energy
FY 1986 Deferrals

(Dollars In Thousands)

Appropriation	Deferred	Add-On	Explanation
o Transportation	$ 8,836	$ 17,536	
-Vehicle Propulsion R&D	(5,344)	(14,044)	Deferral of funding for Stirling obligated for this program by March 21, 1986. The remaining $5.3M unobligated is proposed for deferral.
Electric & Hybrid Vehicles	(2,996)	(2,996)	Deferral of funding for batteries (lead-acid, zirc-bromine, nickle-zinc, iron-air, nickle-cadmium, electric vehicle task force, and transfer to INEL of EHV work).
-Program Direction	(496)	(496)	Deferral of funding for staffing costs, however, funding will be provided if needed, to support full employment under the staffing floors.
o Multi-Sector	$ 713	$ 713	
-ECUT	(237)	(237)	Deferral of funding for tribology R&D.
-NATAS	(476)	(476)	Deferral of funding for energy information and technology transfer provided by National Appropriate Technology Assistance Service. This effort is considered duplicative of the Energy Extension Service in the State and Local Grants program.
Northwestern	9,816	9,816	Deferral of funding for completion of this construction project. FY 1987 appropriation language would allow use of these funds unrestricted in FY 1987 since the add-on was written into FY 1986 Appropriation language.

Department of Energy
FY 1986 Deferrals

(Dollars In Thousands)

Appropriation	Deferred	Add-On	Explanation
Other Unobligated Balances	$ 6,556	$ ---	Deferral of funding of these FY 1985 unobligated balances. There is no significant programmatic effect of withdrawal of these funds from FY 1986.
Total, Conservation	$36,782	$38,926	

Department of Energy
FY 1986 Deferrals
(Dollars in thousands)

Appropriation	Deferred 1/	(Add-On) 2/	Explanation
Fossil Energy Control Technology and Coal Preparation			
- Flue Gas Cleanup	$ .633	($1.194)	Deferral of funding for continued testing the dry NO_x/SO_x cleanup system at the Argonne National Laboratory (ANL). Deferral represents funds remaining after testing ceases on 3/20/86. The additional research represents process improvement and technology transfer rather than long range, high risk, high payoff R&D.
- Gas Stream Cleanup	1.618	(1.691)	Deferral of funding for increase in cleanup work related to direct coal-fired turbines. The Gas Stream Cleanup program can adequately provide the necessary cleanup systems R&D without additional funding.
- Coal Preparation	.714	(.746)	Deferral of funding for additional work on microbubble floatation techniques for a competitive procurement open to both industry and universities. The funds are excessive since the Coal Preparation program already adequately addresses research in the area of physical benefication, including microbubble flotation.
	.588	(.614)	Deferral of funding for Ames National Laboratory effort. The Coal Preparation program represents a balanced and effective approach for attaining clean coal. The Department is concerned about the value of directing additional funds to a specific lab without competition or review.

1/ Net of Gramm-Rudman-Hollings sequester
2/ Net of 6/10 of 1% general reduction

	1.322	(1.492)	Deferral of funding for Carbondale. Deferral represents funds remaining after operations cease on 3/20/86. These funds are in excess of what is required to maintain a balanced program for attaining clean coal. In addition, this support is directed to a specific recipient absent the benefits inherent in a competitive procurement.
AR&TD			
- Direct Utilization	.667	(.697)	Deferral of expanded studies on corrosion and erosion of metallic and ceramic components at ANL. Adequate program already exists at ANL in FY 1986.
- Materials .	.952	(.995)	Deferral of research on strategic materials at Idaho National Engineering Laboratory (INEL). This program was already initiated at INEL in FY 1985 and will be conducted in FY 1986 with carry-over funding.
- Instr. Control & Diag.	.477	(.498)	Deferral of instrumentation activities at INEL in coordination with METC research needs. Adequate funding already exists for a balanced program in Instrumentation, Control and Diagnostics.
Liquefaction			
- Indirect Liquefaction	4.047	(5.073)	Deferral of the continued operation of the LaPorte liquid phase methanol process development unit (PDU). Deferral represents funds remaining after operations cease on 3/20/86. Department believes that commercialization is the responsibility of the private sector and, with the data available in FY 86, industry will be able to make the proper investment decision.

- Direct Liquefaction	1.330	(6.467)	Deferral of the Wilsonville two stage liquefaction pilot plant. Deferral represents funds remaining after operations cease on 3/20/86 and is net of estimated termination costs ($1.5M). Department believes that commercialization is the responsibility of the private sector and, with the data available in FY 86, industry will be able to make the proper investment decision.
	.952	(.995)	Deferral of generic liquefaction research by the Consortium for Fossil Fuel Liquefaction Science. Efforts funded by FY 85 funding will be extended into FY 86. Also, a great deal of generic research is being conducted throughout the rest of the Liquefaction program.
Combustion Systems			
- Adv. Comb. Tech.	.951	(.994)	Deferral of accelerated larger scale testing of advanced coal combustors. Planned RFP was redirected into a combined PRDA in FY 86. Program is therefore delayed and no funds are needed now.
Fuel Cells			
- Phosphoric	1.903	(1.989)	Deferral of continued 11 megawatt stack and invertor technology work with International Fuel Cells (formerly UTC). Additional federal funding is not warranted since the Department believes phosphoric acid fuel cell technology has, as a result of technology developments and demonstrations, reached a maturity level such that the private sector can now continue the final development work and commercialization.

	10.471	(10.942)	Deferral of efforts in the 7.5 megawatt technology aimed at producing prototype fuel cells stacks for the first commercial prototype plant. The reasons for the deferral are addressed above.
	2.734	(5.968)	Deferral of the 40 kilowatt on site program to complete the cost-shared technology program in conjunction with the Gas Research Institute. Deferral represents funds remaining after testing ceases on 3/20/85. The reasons for the deferral are addressed above.
	2.190	(2.288)	Deferral of the 25 kilowatt program involving the dielectric on-site technology of the Englehard Corporation. Successful completion of the verification of a 25 KW dielectric-cooled stack provides the completion of the high risk technology subsystem for the Englehard on-site system. The contractor has the ability to complete the development and fabrication of the balance of plant subsystems and to commercialize the on-site fuel cell system in 1987 without additional DOE support.
- Molten Carbonate	3.329	(3.479)	Deferral of the direct fuel cell stack development program. This is a specific proprietary concept. Successful verification of this concept in FY 85 provides the basis for commercial development by industry without additional DOE support.

		.476	(.497)	Deferral of continued development of a contaminant resistent MCFC capable of processing gases containing sulfur and chlorine. The technology base research on MCFC is adequate and is consistent with the pace of stack technology development. Alternate cell components may be desirable as future product improvement by the private sector.
	Concepts	.952	(.995)	Deferral of cost-shared research on solid oxide fuel cells. Funds are in excess of what is appropriate for the continued technology development and test verification of a 5KW module at the current state of development.
Heat Engines		1.428	(1.492)	Deferral of the examination of multiple concepts in turbine technology. The Heat Engines program can adequately address the longer-term, commercially-oriented purposes of the program without additional funds.
MHD		13.130	(28.850)	Deferral of cost-shared MHD program. The amount to be deferred is as of March 20, 1986 and is net of estimated termination costs ($4.0M). The cost of continuing the program is not affordable in light of current fiscal constraints. MHD requires a very expensive development program, following POC testing, to bring the technology to the point where utilities can decide whether it is a cost effective option for retrofits or new capacity.

Surface Coal Gasification			
- Advance Process Devel.	1.904	(1.990)	Deferral of development of low-cost mild gasification techniques. Program is already focused on basic studies on novel concepts and supporting chemistries leading to the development of systems that can provide a variety of fuel forms.
- Systems Engineering	4.201 1.428	(8.953) (1.492)	Deferral of continued funding of the Waltz Mill fluidized bed gasifier, and the fixed-bed gasifier at Schenectady, N.Y. Technology has been proven and has been ready for transfer to industry for some time. Waltz Mill deferral represents funds remaining after operations cease on 3/20/86 and is net of estimated termination costs ($1.0M)
	.475	(.497)	Deferral of proof-of-concept scale hot gas verification research at the Morgantown fixed-bed gasifier. Current program has just completed study on hot gas research and data must be evaluated before additional funding can be effectively utilized.
- Technology Base	.952	(.995)	Deferral of a detailed study and development of a program plan to he established at INEL for the oil shale extraction techniques. Current program already includes efforts to develop a systems analysis capability that permits evaluation of a total process beginning with mining and other extraction steps and ending with disposal of the process shale.

	1.903	(1.989)	Deferral of additional work in eastern oil shale technology. Efforts are concentrated on generic oil shale R&D that will give a better fundamental understanding of the conversion process regardless of the shale type. Concentration on eastern shales will create an unbalanced program again.
- Construction	.476	(.497)	Deferral of funding for the planning of a new administrative wing at METC. The design and construction of a new wing at METC would not be compatible with the current national and DOE budget constraints. New administrative facilities are of lower DOE priority than funding for R&D activities.
Subtotal	$62.205	($94.367)	
Prior Year Recoveries (OE)	$1.569		Recoveries of prior year operating obligations available for deferral.
Prior Year Recoveries (Construction)	2.074		Recoveries of prior year construction obligations available for deferral.
Unobligated Balance (OE)	.192		Unnecessary unobligated balances.
Section 515 Deferral	.846		FY 1985 reduction for consulting services.
Total FE deferral	$66.886		

Department of Energy
FY 1986 Deferrals
$'s

Appropriation	Deferred	(Add-On)	Explanation
Naval Petroleum and Oil Shale Reserves	$36.461	---	Deferral of prior year funding for operation and maintenance, development and exploratory drilling, development facilities and program direction as a result of planned changes in the drilling program.

Department of Energy
FY 1986 Deferrals
$'s

Appropriation	Deferred	(Add-On)	Explanation
Strategic Petroleum Reserve			
- On-Budget	$197.941	($207.913)	Deferral of new SPR storage facilities construction. The deferral of $197.941 consists primarily of funds appropriated in prior years for crude oil storage facilities construction. The $197.941 is made up of $156.759 of prior year funds and $41.182 of new FY 1986 BA.
- Off-Budget	$577.534	($290.070)	Deferral of funding not required to fill SPR in FY 1986 to 500 MMB, less approximately 1 MMB of test sale oil deliveries, for an actual inventory of 499 MMB. Deferral includes $536.958 that was approved for deferral by Congress until Oct. 1, 1985.

Mr. YATES. It is now almost six months into the fiscal year before the Congress can treat the deferrals. Another month will probably have gone by which will leave four or five months for the next fiscal year before we go through the entire legislative process and the ultimate bill is signed by the President.

What happens to all the expenditures? What is happening to the accounts that are proposed to be deferred? Have you been holding up expenditures for the fiscal year based upon your stated deferrals or do you intend to make expenditures on the basis of the appropriations as voted by the Congress for the fiscal year?

Secretary HERRINGTON. Sir, in an effort to work with Congress, we have continued spending and we intend to continue spending up until March 20. There have been some deferrals——

Mr. YATES. On the basis of congressional appropriation.

Secretary HERRINGTON. Yes.

Mr. YATES. Up until March 20.

Secretary HERRINGTON. Up to March 20 to give adequate time for Congress to review our deferrals.

Mr. YATES. What happens after that?

Secretary HERRINGTON. We will stop spending.

Mr. MURTHA. Last year, if I remember, Mr. Secretary, we had an agreement. Until we judged the deferrals, you kept spending the money. You are not going to do that this year?

Secretary HERRINGTON. There were several extensions granted over and over and over and the extensions dragged out quite a long time. We have not been authorized to do that this year by OMB.

Mr. MURTHA. Even though Congress rejected almost all the deferrals? The same list you sent up here we rejected last year. What makes you think Congress has changed its mind?

Secretary HERRINGTON. The only difference that I can point out would be the Gramm-Rudman situation which has been very difficult, to be honest with you, to face not only here, but down in our department. These deferrals are budget driven, trying to meet the $144 billion target.

Mr. YATES. You mean for the 1987 budget?

Secretary HERRINGTON. Yes.

Mr. YATES. I can understand that, but the deferrals relate to the 1986 budget.

Secretary HERRINGTON. They impact on programs in 1987.

Mr. YATES. But you don't know what is going to happen with respect to the 1987 budget. You have that in prospect, and you have the whole country and probably have the Congress wondering why Gramm-Rudman was ever passed. You don't know, but there will be significant changes, not only in Gramm-Rudman, but certainly in respect to what budgets provide. It seems that from what I read in the papers, even the President himself is dissatisfied with what Gramm-Rudman will bring to the Defense Department and I am sure he is not inclined to accept the cuts that Gramm-Rudman would compel the Defense Department to take.

That being so, to require the other parts of the budget to take up the additional cuts that would be necessary in order to balance the so-called Gramm-Rudman requirements seems to me to be both unacceptable and irresponsible.

So the point I am driving at is that I think it is entirely unrealistic to start on your 1987 budget until you see what the Congress is going to do. Just assuming that Congress will accept the levels of Gramm-Rudman, I think, isn't correct. What you are doing is not giving us a chance to act on the 1987 budget when you do that.

You are just assuming Congress will follow that Gramm-Rudman level. I am not sure they will follow that Gramm-Rudman level. I would suggest that you ought to wait and give us a chance to see where we go.

For all we know, we may make additional cuts in other programs and give you more money in the Department of Energy. There are balancing factors that are involved.

At any rate, I want to go back to your March 20 date. We have just sent you a letter, a letter that I put into the record signed by Mr. Regula and myself and signed by Senator McClure and Senator Byrd asking you to not place the deferrals into effect until the Congress has had a chance to act.

[The information follows:]

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United States Senate
COMMITTEE ON APPROPRIATIONS
WASHINGTON, D.C. 20510

February 17, 1986

The Honorable John S. Herrington
Secretary
Department of Energy
Washington, D.C. 20585

Dear John:

On February 5, 1986, the President transmitted to the Congress proposed deferrals of spending authority adopted in the recently enacted Continuing Resolution for fiscal year 1986. Many of these deferrals represent a significant departure from previously established programs generally supported by both the Congress and the Administration.

With regard to many of these deferrals we are aware that current Department of Energy planning is to provide sufficient funds to allow ongoing programs included in the deferrals to operate until March 21, 1986, pending Congressional action. In the case of the Strategic Petroleum Reserve deferral for facility development we are aware that delays are already occurring because of failure to award construction contracts.

It is our intent to move quickly to address the substance of these deferrals in hearings and in appropriations legislation. It is likely that the Congressional view will be different, at least in part, from the Administration's proposals.

In order not to prejudge Congressional actions and to avoid incurring large costs involved in program termination, we request that the Department of Energy not take any action to terminate ongoing projects identified in the deferrals prior to Congressional action on the fiscal year 1986 Supplemental Appropriations bill.

Sincerely,

James A. McClure
James A. McClure

Sidney R Yates
Sidney R. Yates

Robert C. Byrd
Robert C. Byrd

Ralph Regula

Mr. **Yates**. I am not sure that we can act by March 20. If actions by the Congress are based on historical precedent, I know we won't act by March 20. To say that you will start with your deferrals at that point I think is not permitting a courteous opportunity for the Congress to complete its work.

I don't know that we received a letter responding to our letter of February 17 yet.

Secretary **Herrington**. No, sir. We have not responded. We are aware of the congressional concerns and we are discussing this within the administration, which I am sympathetic to doing.

Mr. **Yates**. We would appreciate, again, emphasizing the fact that we think you ought not to act on your deferrals until Congress has had a chance to act on them. Certainly this member of this committee—the Chairman—will make his recommendations within a reasonable time.

The committee will act within a reasonable time and we hope that the Congress will act within a reasonable time. But as I say, somehow even though we may pass the bill, the other body sometimes gets bogged down in budget impasses and we never are able to work it out.

Let's go into some of the other questions. I assume Mr. Regula agrees with me on that.

Mr. **Regula**. Yes. Right. I do have a question I think that relates to that, Mr. Chairman.

Mr. **Yates**. Sure.

Mr. **Regula**. Mr. Secretary, according to the Comptroller General's opinion on last year's deferrals, deferrals for projects such as the steel initiative and MHD, because the funds are made available in appropriations language without fiscal year limitations, would become available for these specific projects at the end of the fiscal year unless the language that you propose, allowing unrestricted use of these funds in fiscal year 1987 is approved; is that correct?

Secretary **Herrington**. I think that is my interpretation.

TERMINATION OF DEFERRED PROJECTS

Mr. **Regula**. Then what happens in the case of MHD? Say we do not act by March 20, do not approve the language you request, what would happen between March 20 when you intend to shut it down and the beginning of fiscal year 1987 when it will become clear whether or not Congress intends to approve the necessary language?

Secretary **Herrington**. Under the current situation, we would stop spending on MHD on March 20 unless we are able to respond favorably to the letter that you have sent as we did last year.

Mr. **Regula**. If you respond favorably, it will pend until we have time to take appropriate action; is that correct?

Secretary **Herrington**. Yes. Yes. But I have to caution that last year it became a long, drawn-out situation where there was within the administration, OMB—it was difficult to live with and it is not as easy this year for us to accomplish that.

Mr. **Regula**. Would you contemplate you might respond with a time line in terms of saying, well, all right, we will go beyond March 20, but not beyond a certain date?

Secretary HERRINGTON. I would say that is true, but at this point as we sit here today I think March 20 is the only date that we are authorized.

Mr. REGULA. I understand that.

Mr. YATES. Why did you establish March 20?

Secretary HERRINGTON. We thought it was a reasonable time for Congress to act. Forty-five days is what—

Mr. YATES. Forty-five days, except you know about the congressional vacation. March 20 is approximately a month away from now.

Mr. REGULA. The beginning of the recess.

Mr. YATES. The President just sent down his budget a couple of weeks ago and we didn't know about your deferrals. How can we act so fast? I think that is a totally unrealistic attitude for the administration to take.

Secretary HERRINGTON. I am not an expert in this area of the law, but I think deferrals are effective when they are sent.

Mr. YATES. That is true.

Secretary HERRINGTON. Some of the deferrals that were sent at this time were not extended to March 20.

Mr. YATES. You mean some of the items are deferred now without waiting until March 20?

Secretary HERRINGTON. Yes.

Mr. YATES. Such as?

Secretary HERRINGTON. Not in our budget.

Mr. YATES. Not in your budget? I see.

Mr. REGULA. Will the chairman yield?

Mr. YATES. Sure.

Mr. REGULA. It seems to me, in terms of efficiency, you may be running a negative course here, because if you shut down a project and all the things that are attendant to that and then we ultimately overturn the deferral you have start-up costs and it would appear to me, and I would be interested in your response, that this could result in substantially more spending for things that are not productive because you have the close-down and the start-up costs which really ought to be spent on developing technology.

Secretary HERRINGTON. I think your point is a good one. In some cases, that is possible to happen. Loss of jobs or infrastructure in a program are possible.

Mr. REGULA. It would appear to me that in making any decisions on those you might continue or at least hold the deferral in abeyance, in response to the letter, you ought to evaluate what has been the traditional congressional policy attitude on a given project because I think you can anticipate those that you might be successful on and those that you will not and avoid this unnecessary expenditure.

We have got to make every dollar count.

Secretary HERRINGTON. Yes.

Mr. YATES. Who determines whether there will be an extension beyond March 20?

Secretary HERRINGTON. Well, the budget that was sent to the Hill by the President is the President's budget. It is the way that he would like to see the budget go.

Mr. YATES. Why doesn't the present administration look at history, too? Even the Republicans on the Budget Committee voted against the budget last year. Senator Domenici who is the Chairman of the Senate Budget Committee said the President's budget cannot possibly be accepted.

Secretary HERRINGTON. I think he is obligated to extend a budget he would like to see from the Executive Branch. I think he has done that. The office of OMB works with us to put this budget together.

Mr. YATES. It was fated to be torn apart even before it was put together, I think. At any rate, let's turn to this budget. I would only like to express the opinion of this committee that March 20 is a totally unrealistic and totally unacceptable deadline for action by the Congress, particularly with respect to deferrals that the Congress had overturned when they were part of the 1986 budget.

Why OMB and the Department of Energy continue to defer and defer and defer the same items does not make sense to me. As I said, it is like a restoration of the old kind of impoundment that the Executive Branch used to undertake that was certainly held illegal by the courts and was certainly overthrown by the Congress.

Secretary HERRINGTON. I think the main difference is the Gramm-Rudman situation that we are in.

HISTORY OF SPR DEFERRALS

Mr. YATES. Let's take a look at the history of the Strategic Petroleum Reserve and capacity construction. For fiscal year 1982, the administration proposed a deferral of $52,860,000, for Phase III construction. Congress overturned the deferral. In fiscal year 1983, a year later, you proposed a $57,400,000 deferral of Phase III construction. Congress overturned the deferral.

In the 1985 budget, you requested $459,190,000 for construction, mostly for Phase III. Congress accelerated construction by placing funds in the fiscal year 1984 supplemental.

In fiscal year 1985, the administration proposed a $270,738,000 deferral of Phase III construction. Congress overturned the deferral. In the face of all that action over all those years, you come back this year and out of 1986 funds you propose a $197,941,000 deferral of Phase III construction. I am sure Congress is going to overturn it and I think it should overturn it because the construction of the storage facilities is a necessary element of the Strategic Petroleum Reserve.

SPR CONSTRUCTION

We will get into that now. Have you stopped construction on Big Hill?

Secretary HERRINGTON. We are finishing contracts that were in full force and effect. We have, in fact, not issued any new contracts and there were some procurements on the street we did pull back.

Mr. YATES. Why did you pull them back?

Secretary HERRINGTON. Because we did not want to enter into any new contracts.

Mr. YATES. Correct me if I am wrong. The information we have is this has happened so far to the Strategic Petroleum Reserve. The department has suspended the award of Big Hill raw water and brine-line contracts for which bids were received and opened on December 13, 1985. Is that a correct statement?

Secretary HERRINGTON. I think it is.

Mr. YATES. All right. The department has suspended the award of the Big Hill crude oil pipeline construction contract where bids were received and opened on December 20, 1985; is that correct?

Secretary HERRINGTON. Yes.

Mr. YATES. The department has suspended, indefinitely, the receipt of bids for Big Hill stage two construction. Bids were previously scheduled to be received on January 21, 1986. Is that a correct statement?

Secretary HERRINGTON. Yes.

Mr. YATES. The department is delaying the issuance of an invitation for bids for Bayou Choctaw Phase III construction; is that correct?

Secretary HERRINGTON. Yes.

Mr. YATES. The SPR program directed the field to stop the leaching program of Bryan Mound and West Hackberry on January 1, 1986; is that correct.

Secretary HERRINGTON. Yes.

Mr. YATES. That was all taken before you sent the deferrals down; right?

Secretary HERRINGTON. It was done in anticipation of the deferral.

Mr. YATES. When did you know you were going to send down the deferral?

Secretary HERRINGTON. I would not be able to tell you the exact moment. It was during the budget process, during the late fall.

Mr. YATES. During the fall?

Secretary HERRINGTON. In anticipation of the Gramm-Rudman.

Mr. YATES. When did Congress act on overturning the deferral for the previous year? It was only a couple weeks before that; wasn't it?

Secretary HERRINGTON. We notified Congress in December of the deferral.

Mr. YATES. Our bill went through overturning the deferral in August. One or two months later we were told you were coming back with another deferral. I don't think that is playing fair with the Congress at all.

Secretary HERRINGTON. There are a couple of points I would like to make. In fairness——

Mr. YATES. Deferring the same money, right?

Secretary HERRINGTON. For the next year.

Mr. YATES. Yes. Continuation of deferral. What happens is the administration refuses to take the congressional viewpoint that this money should be spent.

Secretary HERRINGTON. Well, that is correct in these cases, yes.

Mr. YATES. Not only in this year, but going all the way back to 1982, you tried to stop the spending of money for petroleum reserves by deferral after deferral after deferral. Congress has overturned it each time.

How many more times do we have to do it before you accept the fact Congress wants the construction of SPR to go ahead?

Secretary **Herrington**. The only answer I have for you is Gramm-Rudman changed a lot of things. We would have done a lot of things differently if it were not for Gramm-Rudman.

Mr. **Yates**. You didn't have Gramm-Rudman before that, yet the preceding five years you did that. Aren't you really hanging on rationalization for your action on Gramm-Rudman for action you would have taken anyway?

Secretary **Herrington**. It certainly makes it more difficult.

DEPARTMENTAL BUDGET PRIORITIES

Mr. **Regula**. You are saying the impact of Gramm-Rudman, Mr. Secretary, but I look here at your fiscal year 1987 budget and Atomic Defense Energy Activities go from $7.232 to $8.230 billion. If we are going to cut, we cut everywhere.

Secretary **Herrington**. There are two things. One is the policy of SDI. We have an obligation to meet the SDI milestones that are given to us to perform and that has, in fact, required increases in the defense side of our activities.

The other one is the President's weapon stockpile memorandum that we have to meet and we have to pay for. We do not have independent judgment on that. We are required to deliver and manufacture those weapons.

Defense, yes, has gone up. Defense in our department is roughly 43 percent of our total activities.

Mr. **Regula**. Mr. Chairman, I am sure there is a good reason for it, but if we are talking about Gramm-Rudman——

Mr. **Yates**. I don't think there is a good reason for it.

Mr. **Regula**. I am not talking about that. I am leading to something else.

Mr. **Yates**. I just don't happen to agree with their technology. Congress has not agreed with their priorities.

DEPARTMENTAL ADMINISTRATION

Mr. **Regula**. I am not sure there is a good reason to increase your office from $1.6 to $1.9 million. That does not seem consistent with Gramm-Rudman.

Mr. **Yates**. It is a SDI priority.

Mr. **Regula**. Why would you increase your own budget?

Secretary **Herrington**. What was that point?

Mr. **Regula**. The Office of the Secretary goes from $1.6 million to $1.9 million.

Mr. **Dicks**. That is different.

Secretary **Herrington**. Mr. Chairman, the staff I have at this time were on board under a prior Secretary. There are more persons figured into my budget that were transferred from other parts of the department. There have been some offsetting changes in FTEs around the department.

Mr. **Regula**. But, Mr. Secretary, as I look down the list on departmental management, every one of them is up with the exception of Contract Appeals and Minority Economic Impact and Congressional Intergovernmental, but the total is $260 million in 1986 versus $288 million in 1987.

You know I can understand you probably have need for personnel, but in our own budgets we are being asked to cut 15 percent in operating congressional offices as a result of Gramm-Rudman.

Mr. **Yates**. Exactly right.

Mr. **Regula**. All I am saying is you are using Gramm-Rudman when it is convenient and not when it isn't. You go to the defense issues—but my concern is I think we have to be consistent.

Secretary **Herrington**. You raise a point on the Office of the Secretary's budget I would like to look into and come back to you. I am not familiar with what you are saying. If you are saying that it is going up across-the-board——

Mr. **Yates**. Your budget officer should know the answer to that.

Secretary **Herrington**. I would be happy to submit that for the record.

Mr. **Yates**. What is being submitted for the record? It is right in there.

Mr. **Regula**. A response to my question as to why the departmental management budget would be up from $260 million to $288 million while at the same time we are faced with trying to hold the line at reduced costs on other things. There is probably a good rationale, but we ought to have that in the record.

Mr. **Yates**. I am just asking what the budget officer says is the rationale for that. What is the rationale for that?

Ms. **Hesse**. Many of the increases in the 1987 budget for departmental administration have to do with SLUC charges. For example, with the amount of rent that GSA charges us which we have no control over.

Mr. **Yates**. For $28 million?

Ms. **Hesse**. No, that is not all that. There are some other things. Gramm-Rudman, for example, cut a lot of the funds in 1986, so we are using a lower 1986 base than we would and we will probably reprogram some unobligated balances in 1986 to make up for those numbers in 1987.

Mr. **Yates**. You are making up for the cuts that took place in 1986 by adding to 1987.

Ms. **Hesse**. We will add the money back. We are doing reprogramming in 1986 to add some of the money back.

Mr. **Yates**. Couldn't you say that was an end run-around Gramm-Rudman?

Ms. **Hesse**. I think not. That is a flexibility; we all have to bend under Gramm-Rudman.

Mr. **Murtha**. I don't follow that, Mr. Chairman.

Mr. **Yates**. I don't either. Perhaps we ought to ask for a transfer of the budget officer over to our side.

Ms. **Hesse**. Maybe we could help you.

Mr. **Yates**. Help us. We are required to take a cut in our clerk hire budget for 1986.

Mr. **Dicks**. We can get GSA to raise our rent.

Mr. **Yates**. How do you propose we should act for 1987? We would love to have your help on this. It kind of looks like an end run really. I don't understand what your explanation for that was.

Ms. **Hesse**. Well, I think that we do have—within Gramm-Rudman, that we do have within the procedures that exist within the Executive Branch the authority to reprogram. All of those reprogramming proposals must, of course, come to the Appropriations Committee for review and approval and we would try to compensate for some of the cuts that we have taken in 1986 with reprogrammings which we will send forward to the Congress for review.

Mr. YATES. We know the increased rental is only up a million dollars. That leaves $27 million for the other purposes.

Ms. HESSE. I think that——

Mr. YATES. And the utilities have probably gone up another million dollars which would leave $26 million. I think perhaps you had better give us a better breakdown on that, don't you?

Ms. HESSE. We will supply that for the record. Some of it has to do with revenues generated and——

[COMMITTEE NOTE.—The requested record information is provided later in this transcript.]

Mr. YATES. Did you want to ask a question?

Mr. MURTHA. No, Mr. Chairman. I am just thinking every committee in the Congress has been cut back, every office has been cut back, clerk hire, everything else, and the Secretary tells us he has taken out the programs that Congress is interested in. He has rearranged the priorities, programs that we have agonized over. We have been sitting here, Mr. Secretary, since 1974 when they had the energy crisis.

You are cutting out fossil fuel and, things that we feel are important and obviously you disagree with and then you raise your own budget

It is pretty hard for me to sit here, unless you have an excellent explanation, and you obviously didn't even know it happened yourself.

Secretary HERRINGTON. If you won't mind, I would like to analyze that before we answer the question because as Martha pointed out, we do do a lot of work for others. The Energy Department is tasked with a lot of things. There are allocations of overhead. We don't own the building.

We get hit from GSA for everything we do. I would like to analyze it before I give you an answer.

Mr. MURTHA. Mr. Secretary, nobody supports defense more than I do, but when you come across with a explanation like this it infuriates me because here I am supporting the President's budget on defense on and off most of the time and you come over here with a budget cutting out congressional options and deciding for yourself you are going to raise your own budget.

That is absolutely unacceptable to me.

Secretary HERRINGTON. There is nothing changed in my office. It is the same as it was last year. If there is an increase in it, we will find out where it is and submit it.

Mr. YATES. If there is nothing changed since last year, your office won't be like ours. We are cutting back on our offices because of Gramm-Rudman. If yours is the same, you are not cutting back, you are putting money in to cover Gramm-Rudman. Apparently, what has happened is that your cutbacks last year that were required by the Congress are being compensated for in your new 1987 budget.

Let me go on for a minute.

Mr. **Dicks**. Mr. Chairman, could we go on this one point? Did the Office of the Secretary have to take a cut on the 1986?

Secretary **Herrington**. On the 1986 sequester, sure.

Mr. **Dicks**. Was it applied to the Office of the Secretary?

Secretary **Herrington**. Yes. It applied across-the-board even to impounded funds and trust funds. It applied everywhere. Now, if your increase—what I want to look into, we are working from a 1987 budget with a 1986 sequestered base. I want to find out what the difference is and I would like to analyze it and provide it to you.

Mr. **Yates**. On all the other programs, you have said we are looking forward to the coming impact of Gramm-Rudman and I had to oppose your statement saying you don't know what is going to happen. Certain factors may come into being that dispute that. But that was before I knew what you were doing with respect to your own office.

If you are facing cuts in the programs as a result of the impending 1986 Gramm-Rudman guillotine, why do you increase your own for 1987? It just does not make sense.

In your 1987 budget, you should be facing a 20 percent cut rather than a significant increase as you propose.

Secretary **Herrington**. If I could say to the three of you I have no desire to increase my office budget. I am satisfied with our personnel staffing, our budgets. If there is a reason for the increase I would like to look into it and analyze it for you.

Mr. **Yates**. Somebody put it in there.

Secretary **Herrington**. I understand that, but it may not be——

Mr. **Yates**. You mean it is a typographical error?

Secretary **Herrington**. No. I do not mean that. A lot of people did a lot of work on this budget before it came to the Hill. It may be an overhead factor, something GSA has given us or work for others. I don't know as I sit here, but I will tell you I have no desire to increase my office.

[The information follows:]

Departmental Administration Funding

The Departmental Management category includes general management and support activities benefiting all elements of the Department of Energy. There are various increases and decreases which make up the difference between the FY 1986 budget authority estimate and the FY 1987 request.

It should be noted that the budget authority in Departmental Administration plus unobligated balances remaining from FY 1985 will be used to maintain a higher program level in FY 1986 than is indicated in the budget documents which only address budget authority. The unobligated balances will be reprogrammed where necessary to maintain funding levels in programs where needed.

The Office of the Secretary budget authority of $1,603,000 in FY 1986 is increased by $+647,000 resulting from unobligated balances/reprograming to a program level of $2,250,000. The decrease to $1,860,000 in FY 1987 will result in reduced other compensation and reduced travel.

The Board of Contract Appeals budget authority in FY 1986 of $384,000 is increased by $+31,000 resulting from unobligated balances/reporgramming to a program level of $415,000. The decrease to $356,000 in FY 1987 results from a reduction in the average salary.

The Inspector General budget authority in FY 1986 of $18,158,000 is increased by $+1,114,000 resulting from unobligated balances/reprogramming to a program level of $19,272,000. The increase to $21,092,000 in FY 1987 is a function of the following changes: (1) Reduction in salaries and benefits requirements of $−241,000, (2) Increase in travel of $+208,000, (3) Increase in contractual audits and support services of $+1,603,000, (4) Increase in capital equipment of $+250,000.

The General Counsel budget authority of $9,715,000 in FY 1986 is increased by $+351,000 resulting from unobligated balances/reprogramming to a program level of $10,066,000. The decrease to $9,953,000 in FY 1987 is a function of the following changes: (1) Reduction in salaries and benefits requirements of $−229,000, (2) Increase in travel of $+25,000, (3) Increase in support services of $+91,000.

The Management and Administration budget authority of $121,540,000 is increased by $+24,552,000 resulting from unobligated balances/reprogramming to a level of $146,092,000. The FY 1987 budget authority of $140,147,000 is expected to be supplemented by $6,000,000 from deobligated funds which will occur in FY 1987. The increase from FY 1986 to FY 1987 of $+55,000 is a function of the following changes: (1) Decrease in salaries and benefits of $−569,000, (2) Increase in workman's compensation of $+391,000 (3) Increases in travel and contractual services of $+5,900,000, (4) Decrease in capital equipment of $−5,667,000.

The Operations Office budget authority of $88,848,000 is increased by $+10,474,000 resulting from unobligated balances/reprogramming to a level of $99,322,000. The FY 1987 budget authority of $94,222,000 is a decrease of $−5,100,000. The decrease is composed of $−2,801,000 for salaries and benefits, $−2,095,000 for travel and contractual services, and $−204,000 in capital equipment.

The Office of Minority Economic Impact budget authority of $2,596,000 is changed to reflect a deferral of $−393,000 and an increase of $+246,000 resulting from unobligated balances/reprogramming to a level of $2,842,000. The FY 1987 budget authority of $1,789,000 will be supplemented by the deferral amount of $+393,000 for a total FY 1987 funding availability of $2,182,000. The decrease from FY 1986 to FY 1987 of $−660,000 is a function of the increase in salaries and benefits of $+7,000, and decreases in travel and contractual services totaling $−1,082,000.

The Policy, Planning, and Analysis budget authority of $7,448,000 in FY 1986 is reduced as a result of the reprogramming by $−85,000 to a program level of $7,363,000. The increase to $7,855,000 in FY 1987 results from salaries and benefits increases of $+221,000, and increases for travel and contractual services of $+478,000.

The Congressional, Intergovernmental and Public Affairs budget authority of $5,116,000 in FY 1986 is increased by $+943,000 resulting from unobligated balances/reprogramming to a program level of $6,059,000. The decrease to $4,915,000 in FY 1987 results from decreases salaries and benefits of $−766,000, travel decrease of $−5,000 and contractual services of $−373,000.

The International Affairs budget authority of $4,647,000 in FY 1986 is increased by $+543,000 resulting from unobligated balances/reprogramming to a program level of $5,190,000. The increase to $5,790,000 in FY 1987 results from salaries and benefits increases of $+101,000, and travel and contractual services increases of $+499,000.

WHITE HOUSE DETAILEES

Mr. Yates. Now, do you have payroll padding for employees that the White House uses?

Secretary Herrington. We do not. We do not payroll pad.

Mr. Dicks. Does the White House?

Mr. Yates. Well, the White House has a lot of people to transfer, doesn't it?

Secretary Herrington. I think the law provides for a certain number of detailees that are reported to Congress.

Mr. Yates. I see, and those details are charged to your budget.

Secretary Herrington. I don't know the number of detailees we have. We may have several, but I don't know.

Mr. Yates. Well, would any of your people know the answer to that question?

Secretary Herrington. We would be happy to give that to you.

Mr. Yates. Do you know the answer to that question?

Ms. Hesse. I don't know the exact number.

Secretary **Herrington**. There are not a lot of detailees in our department. Detailees from other jobs have been as high as 450 in the White House in every administration regardless of party. I think President Reagan's——

Mr. **Yates**. 450 from various departments?

Secretary **Herrington**. Yes.

Mr. **Yates**. All charged to the other budget.

Secretary **Herrington**. The highest was Lyndon Johnson. Ronald Reagan has had one of the lowest detailee situations of any President.

Mr. **Yates**. It would be interesting to get the answer to that. I think we will do that.

[The information follows:]

EMPLOYEES DETAILED TO THE WHITE HOUSE

There are currently 8 employees of the Department on detail to the White House.

DEFENSE-RELATED ACTIVITIES

Here is what "Inside Energy" publication dated February 7 says:

> The budget heightens the military's stake in DOE. Further militarization of DOE at the expense of energy R&D and traditional Federal responsibilities is being proposed by the Reagan Administration in its fiscal 1987 budget submission to Congress. More of DOE's budget will be devoted to the defense programs than ever before, but congressional sources and even a number of DOE officials believe there is little chance of the budget enactment by Congress. As in previous years, DOE is seeking deep cuts in non-nuclear R&D, but this year in an effort to meet the deficit target mandated by Gramm-Rudman-Hollings, the agency is hoping the private sector will purchase its power marketing administrations and the Naval Petroleum and Oil Shale Reserves.

Now, I don't know how that helps the budget.

> Similarly, privatization of Uranium Enrichment Service is proposed.

Then further on in the publication dated February 10, 1986, we find this.

> Monies devoted to the production of nuclear weapons and related defense activities would increase eight percent in fiscal year 1987 to $8.3 billion, more than a billion dollars as compared to $7.2 billion slated to be spent in the fiscal year 1986.
>
> Defense would swallow almost 69 percent of DOE's budget authority in fiscal year 1987.

I thought Gramm-Rudman was supposed to have a balance between the defense program and domestic programs.

Mr. **Murtha**. We had a briefing from OMB and Defense yesterday. These cuts are absolutely supposed to be across-the-board. In 1986, the President had some discretion, but in 1987, he has no discretion if the Congress does not act in its sequestration.

Mr. **Yates**. By the sequestration.

Mr. **Murtha**. If we don't come within $10 billion of the target, there is no discretion at all in 1987.

Mr. **Yates**. Okay.

> However, staff of the Senate Energy Committee asked DOE to separate defense from civilian efforts and account for receipts to DOE and that inquiry resulted in a much higher level of defense-related expenditures.

Has that been made available to this committee?

Secretary **Herrington**. I don't know.

Mr. **Yates**. We ought to get it. May a copy of that be made available to this committee?

Secretary **Herrington**. Sure.

[**Subcommittee note**.—The requested record information appears later in this transcript.]

Mr. **Yates** [reading]: "A senior DOE budget official reluctantly confirmed for the staff that funding for military programs would constitute 84 percent of DOE's 'contribution to the deficit' as a committee aide put it. That figure was derived by subtracting from the $12.1 billion in new budget authority projected receipts from DOE business enterprises more than $2.2 billion leaving DOE with a total of $9.86 billion that must be financed by private or government securities, thus the DOE budget of $8.3 billion is 84 percent of the non-reimbursed new budget authority, the staffer explained."

Well, what is really happening is you are carrying out the efforts of former Secretary Edwards, aren't you, as far as the non-defense items are concerned. That part has been shrinking and shrinking and shrinking while the defense part of the Department of Energy goes up and up and up.

Secretary **Herrington**. I don't agree with that at all.

Mr. **Yates**. Tell me how I am wrong, Mr. Secretary.

Secretary **Herrington**. We are not shrinking on an intentional basis. We are taking what money we are given in our targets and attempting to allocate it as best we can among the projects. The defense activities have to be driven by what milestones we have to meet on things such as SDI which is costing a considerable amount of money.

[The information follows:]

DEFENSE-RELATED EXPENDITURES

The Department did not provide an analyis to the Senate Energy Committee, but rather discussed with the Committee staff their analysis and agreed that their figures were arithmatically correct. However, those figures are misleading. The DOE budget proposes a program level of $12.1 billion of which $8.2 billion is for Atomic Energy Defense Activities. The fact that some DOE activities are business enterprices which produce revenues does not change the portion of the budget applicable to military programs or increase its contribution to the Federal deficit.

If one looks at the total resources available to the Department in FY 1987, that is, budget authority plus all revenues which result from the Department's activities, including uranium enrichment and Power Marketing Administration revolving funds, the figure is $19 billion. Our Atomic Energy Defense Activity is only 43 percent of this figure.

Mr. **Yates**. Our figures indicate that your non-defense budget makes available only $1 billion for actual energy research. Is that a correct statement?

Ms. **Smedley**. No.

Mr. **Yates**. What is the correct statement?

Secretary **Herrington**. It does not sound right.

Mr. **Yates**. What is the correct statement?

Ms. **Smedley**. Mr. Chairman, I think what was done in that analysis that you referred to was very misleading. They took our total budget authority of $12 billion, constructed all receipts and put the total amount that was in the $12 billion over the net on the bottom line.

It would have been just as accurate to take the $4 billion that is related to energy and put it over that number on the bottom line and said that roughly 50 percent of our budget goes to energy. Both of those are very misleading statistics and I think that the numbers out of our budget that the Secretary has referred to are far more accurate.

Mr. **YATES**. May we take a look at your budget highlights on page 7? Is it appropriate to take the total of the following items and say they constitute the non-defense items: one, magnetic fusion, two—that is power systems R&D, nuclear energy, fossil energy, conservation research and development, solar and electric energy systems and storage. When we add all those up you come to about a billion dollars.

Ms. **HESSE**. Well, I think that by our calculations on page 7 that about half is devoted to defense related R&D and the other half would be related to civilian. If you take general science and fusion.

Mr. **YATES**. What is wrong with the proposal I make? Presumably this justification that you have given us tells us under the heading research and development what amounts are available, to be made available, during fiscal year 1986 for non-nuclear research and we——

Ms. **HESSE**. Non-nuclear research.

Secretary **HERRINGTON**. Non-defense or non-nuclear?

Mr. **YATES**. Energy research is what I am talking about, energy research other than weapons research, civilian for our programs on this committee.

Ms. **HESSE**. Everything other than the last two lines.

Secretary **HERRINGTON**. Everything other than the last two, we figure.

Mr. **YATES**. What about clean coal technology? Nothing should be added for that. Money was added last year, wasn't it?

Ms. **HESSE**. We are not counting that.

Mr. **YATES**. We don't count that. All right. Then you don't want to add weapons research, do you? You don't want to add naval reactors development, do you?

Secretary **HERRINGTON**. No.

Mr. **YATES**. Okay. So take what you want to take. Take the other items. You come out with a billion dollars, so my figure is about right.

Secretary **HERRINGTON**. More than that.

Mr. **YATES**. Well, now general science and supporting research environment have to do with energy, not directly, does it?

Secretary **HERRINGTON**. General science and which? I think it does.

DEFERRALS

Mr. **YATES**. Okay. At any rate, let's talk about deferrals now. One of the deferrals relates to the conservation research laboratory at Northwestern University, construction on which has already started, and you want to defer it. You want to defer the money for this year; is that correct. Why do you want to defer that?

Secretary HERRINGTON. It has been deferred, Mr. Chairman, but we are in negotiations with OMB attempting to make that a rescission.

Mr. YATES. Would you let the committee know? We would appreciate you letting us know about that.

Secretary HERRINGTON. Yes, sir.

Mr. YATES. Okay. Number two, let's go back to the Strategic Petroleum Reserve in which Mr. Murtha and I were so defense-minded.

SPR INVENTORY LEVEL

Mr. YATES. The committee thought it wise, and the Congress thought it wise, to buy oil for a strategic oil reserve when it was $30 a barrel and more. If we were indeed wise in that assumption, why isn't it the better part of wisdom now to continue to buy oil when it is $15 a barrel? Why shouldn't we continue that program, knowing, as you do apparently—in your statement, there is one phrase there where you say "We must use this respite to plan for a strong secure energy future in an atmosphere of calm resolve"?

Now we are in an atmosphere of calm resolve as far as we are concerned. We are not under the sword of Damocles, that the OPEC consortium placed over our head, at the moment. But the cycles churn. Why isn't it the better part of wisdom to continue to buy oil at the present prices and store it away in the same way as we were doing for the strategic metals reserve? It makes sense, doesn't it?

Secretary HERRINGTON. I think if you have sufficient money, it makes sense.

Mr. YATES. But this is national defense we are talking about. Really we are talking about an emergency, when our defense forces need fuel and our industrial structure needs fuel. It is available today. We are talking about the use of a reserve when an emergency occurs. Therefore, the constraints on expenditures that are taken off for defense should be equally taken off for the program at this time.

Secretary HERRINGTON. The only thing I can say on this is there is a substantial difference of opinion as to what is a sufficient level of fill, because in taking the amount in the ground, you have to translate it into how many days of imports you are protecting. The wisdom in the defense community is that 120 days is a sufficient insurance policy. We have the capacity if we finish Big Hill to go to 750 million barrels, and there were advocates of that.

Mr. MURTHA. Could I ask who in Congress advocates this position?

Mr. YATES. What position?

Mr. MURTHA. The position 120 days is adequate. Norm Dicks and I sit on Defense, and I just wonder who is advocating 120 days is sufficient?

Mr. YATES. Maybe the Defense Department said that.

Mr. MURTHA. No, he says Members of Congress said they are advocating it.

Secretary HERRINGTON. I don't want to get into names.

There are people concerned about the budget, and this is a balancing operation. I don't think anyone is saying the Strategic Petroleum Reserve is sufficient for all time. What is being proposed is a moratorium, and if things should change, to maybe continue—there is a balancing act——

Mr. MURTHA. What worries me, Mr. Secretary, is we push to get this thing filled at a low price, and it is not going to stay down. I don't think you would predict it is going to stay at $15, or whatever the price is today, for an extended period of time. Now is the time to continue to fill it, when we have calm, and when we don't have interruption in the Middle East.

It seems to me somebody with your background in the military, I think, would see the significance of filling this petroleum reserve.

Secretary HERRINGTON. The problem with filling the petroleum reserve is that it is expensive.

Mr. MURTHA. I see SDI expenditures in this budget here that are expensive. I see weapon systems which are much more expensive than we would like to pay. We have to make a decision, a decision based on priorities. This is just as important to national defense, in my estimation, as some of these weapon systems that we have and we continually vote for.

Mr. YATES. The Stealth bomber won't fly without oil, will it?

Mr. MURTHA. It could be. I am not sure how it flies, but I am sure——

Mr. DICKS. Stealthily.

Mr. YATES. The B-1B won't fly without oil. Well, at any rate, can you tell us who advocates that time period?

Secretary HERRINGTON. I agree with you——

Mr. YATES. Do you want to stop there?

Secretary HERRINGTON. No, I don't.

Mr. MURTHA. We will take that, Mr. Secretary.

Secretary HERRINGTON. I will agree with you that it is a very important national asset. The question I have in my mind in making this proposal is how much is enough?

Mr. MURTHA. Mr. Secretary, if it hadn't been for this committee, there wouldn't be very much oil in that petroleum reserve, I will tell you that, because this committee pushed year after year to get it up and the department, if I remember, came up with substantial petroleum reserve deferrals every year. Isn't that the history of it?

Secretary HERRINGTON. I wouldn't agree. I would say you would have to share some of that credit with Ronald Reagan.

Mr. YATES. Come on. Everybody shares credit with Ron Reagan, but I will dispute it in this case, because we have gone over every request the President made for purchasing, you know that as well as I.

Secretary HERRINGTON. The major filling of the SPR happened under the Reagan Administration.

Mr. YATES. Congress put the money in. He is taking credit for what we did. Ronald Reagan tried to defer it.

Secretary HERRINGTON. It is joint credit, I think, We like to give credit, but I think you should give some credit too.

Mr. YATES. You haven't given us credit.

Secretary HERRINGTON. I do.

Mr. **Yates**. What you are doing is coming forward with a deferral that says, "We don't agree with you."

Secretary **Herrington**. Enough is enough.

Mr. **Yates**. You said that in 1982 and 1983 and 1984. The first year after—no, the first year that Ronald Reagan came in, we put in the money in for purchasing and construction, and Ronald Reagan tried to defer it. Now I don't know—should he take credit for the deferral that was overturned?

Secretary **Herrington**. The administration reached an accommodation with Congress, and we agreed with what happened.

Mr. **Murtha**. I hope you will see the wisdom of doing that again, because this is a mistake.

Mr. **Yates**. What is the accommodation the administration reaches with Congress? You know, when we were in conference, and Mr. Regula—we are off on a tangent here, but I think it is appropriate to review history as it was made. We were in the conference with Senator McClure in the Senate on the Interior bill, and we brought the bill out after our agreement to the full conference. We had negotiated it, and we were told in the full conference that if we reduced it by six-tenths of one percent, the White House would accept it.

Fine, we brought it out, we accepted the reduction. You got a reduction of six-tenths of one percent. Every agency in our bill got a reduction of six-tenths of one percent. Lo and behold, now we are beset with a series of rescissions and deferrals that threaten to gut many of the programs which we weren't told about when we agreed on the appropriations bill.

Now, when you talk about reaching an accommodation with the White House, we thought we had reached an accommodation with the White House. We were told by Senator Hatfield we would reach an accommodation with the White House if we approved that cut. We have no accommodation with you. Apparently you don't consider what we were told was an agreement as any kind of agreement because you and other agencies coming before this committee are coming in with rescissions and deferrals from the amounts that were agreed on with the White House.

Secretary **Herrington**. When you speak about accommodation and agreement, from year to year when the Congress passes a bill and the President signs it, you have an agreement. The President has the option to veto. There are other options in the process.

Mr. **Yates**. I agree with that. I agree with that, but I thought we had an agreement. Why then the rescissions and deferrals which indicate there was no agreement? We put money in there for the Strategic Petroleum Reserve; you want to defer it. We put money in there for the Naval Petroleum Reserves; you want to sell it. We put money in there for construction of Big Hill, you want to defer that. We put money in there for that whole list of deferrals that you sent us, which we put into the record. I call that a non-accommodation rather than an accommodation.

Secretary **Herrington**. It is simply a matter of fiscal restraint.

Mr. **Yates**. The only reason I am erupting as I am, Mr. Secretary, is because you want to give Ronald Reagan the credit for it, and Ronald Reagan doesn't want to take the credit because he files deferrals.

Secretary Herrington. On the Strategic Petroleum Reserve, it happened within the last five years, and I want to give credit to him.

Mr. Yates. No question on that. I want to congratulate Mr. Murtha on that, not Ronald Reagan.

Mr. Murtha. Thank you.

Secretary Herrington. He had some help.

COMMITTEE RECOMMENDATIONS ON SPR

Mr. Yates. We all moved on that. At any rate, we are going to move on it again, on your deferral. You can tell OMB we are going to recommend, at least as far as I am concerned, we are going to recommend to Congress we continue the construction of Big Hill, and we are going to continue the purchase of oil not only for the sake of the defense of the country, but for the foreign policy of the country. And I will tell you about the foreign policy, and I think you will agree.

The reductions in the price of oil have hurt drastically a number of countries whose economies we want to help. One of them is Mexico. Shouldn't we continue to help that economy by buying their oil? Venezuela, shouldn't we help the economy of that country by buying oil? Nigeria is having trouble in Africa. Shouldn't we help that country by continuing to buy oil?

In order to perform an act of national defense, to keep improving the Strategic Petroleum Reserve, if national defense overlooks in great measure the requirements of Gramm-Rudman, then the Strategic Petroleum Reserve fits into that category.

Having said that, do you want to comment on that? Do you find yourself in agreement with that?

Secretary Herrington. Generally, yes.

Mr. Yates. Specifically?

Secretary Herrington. In some parts of it. I think going into the individual countries is probably a matter of the foreign affairs of the country outside the purview of the Department of Energy.

Mr. Yates. It is a good idea, though, isn't it?

Secretary Herrington. It is better to purchase the oil probably than hand the money over as aid, I would say.

Mr. Yates. All right. Would you tell that to President Reagan when you see him at the Cabinet meeting?

Secretary Herrington. If I am asked.

Mr. Yates. Don't you speak unless you are asked? Can't you say, "Hello, Mr. President", unless you are asked?

Secretary Herrington. Those discussions are ongoing, as you know, right now. I think that is a general topic in both the Congress and the administration.

SALE OF THE NAVAL PETROLEUM RESERVES

Mr. Yates. All right. Tell me why you want to sell the Naval Petroleum Reserves at this time, when the price of oil is half of what it was and when the price which you will get for the reserves will be half of what you would have gotten had you sold it when the price was $30 a barrel?

Secretary Herrington. I don't think we know a price.

Mr. **Yates**. Isn't that common sense? Whoever is going to buy petroleum reserves is going to pay you on the basis of the value of the oil in the reserves. Isn't that correct?

Secretary **Herrington**. That is right. They are going to pay us on the value of the petroleum reserves, not on the price of oil as it sits today. There is an income stream from the petroleum reserves that will go for ten years plus.

A couple points I would like——

Mr. **Yates**. Based upon the value of the oil, right?

Secretary **Herrington**. We both agree, I think Mr. Murtha pointed out we don't expect oil to sit at $15 a barrel forever.

Mr. **Yates**. You are agreeing with the committee, we ought to be buying oil at this price, because it is going to go up, right?

Secretary **Herrington**. I thought we were talking about the Naval Petroleum Reserves.

Mr. **Yates**. We are talking about that, but we are also talking about what we talked about previously, and that is the question of buying oil. Now the oil we have in the Naval Petroleum Reserves is subject to the same forces that you discounted a few minutes ago.

Secretary **Herrington**. There are several things about the Naval Petroleum Reserves. One, they are declining fields, we have a revenue stream, but it is going down. We are having to spend money on enhanced recovery in those fields.

The question that I ask is: Should the government run the second biggest oil and gas field in the country? I don't think so. I think private enterprise can do it better.

Mr. **Yates**. If it is a source of income, as it is, can't we use the income?

Secretary **Herrington**. Well, you can get the income. If you sell it to people who sell the oil from it, they will pay income taxes. We get the cash that comes from the oil that is sold to them.

Mr. **Yates**. You are going to get the income from the oil companies assuming that you don't have the kind of loopholes you have at the present time for the oil companies. Right? You are not going to get as much income——

Secretary **Herrington**. Which loopholes are you referring to?

Mr. **Yates**. You are talking about expenses for one thing, as you drill the oil, you are talking about the other kinds——

Secretary **Herrington**. These are wells already in the ground. There is some drilling going on.

Mr. **Yates**. Won't they get special benefits for being in the oil industry that other industries don't get?

Secretary **Herrington**. Under the tax bill you passed, I think they are cut back, and they are very reasonable.

Mr. **Yates**. It hasn't passed the Senate yet.

Secretary **Herrington**. That is correct.

Mr. **Yates**. Who knows what condition it will be in when it passes the Senate? Regardless of that, why go through all that when, first, we need the oil in a reserve in this country for that defense; and, secondly, we need the oil for the income that it brings in? It seems to me that the better part of wisdom, if I can use that hackneyed phrase, again requires that we overturn your recommendation. Don't you agree, Mr. Regula?

Mr. **Regula.** I was just curious, Mr. Chairman. Maybe what we should do is use the money from the Naval Petroleum Reserves and fill the SPR, to 750 million barrels. Because you can get oil out of SPR a lot faster than you can get it out of the Naval Petroleum Reserves.

Mr. **Yates.** Except if you put it in the reserve, you can get it out just as fast.

Mr. **Regula.** I don't think so. You have to pump that one. Do you happen to know, Mr. Secretary, what the maximum rate would be that you could pull out of the petroleum reserve on an annual basis or a daily basis?

Secretary **Herrington.** I heard the figure—go ahead.

Mr. **Yates.** Identify yourself for the record.

Mr. **Bauer.** Don Bauer. The MER rate, or the maximum efficient rate of recovery, is currently around 130,000 barrels per day at Elk Hills, and it is about 3,000 barrels per day, I believe, at Teapot Dome.

Mr. **Yates.** Twice as much—130,000 as opposed to——

Mr. **Bauer.** 130,000 as compared to 3,000.

Mr. **Yates.** Sorry.

Secretary **Herrington.** Teapot Dome is a much smaller facility.

Mr. **Regula.** That is a daily flow rate?

Secretary **Herrington.** Yes.

Mr. **Regula.** Out of SPR, if you had to, what would be the——

Mr. **Bauer.** Your drawdown of SPR, on the basis of having half a billion barrels in the ground, is 3.3 million barrels per day.

Mr. **Regula.** According to my calculations, it would cost you about $3.5 billion to go to 750 million at today's prices. You are talking about 250 million barrels at $15 a barrel would be $3.5 billion.

Secretary **Herrington.** Yes. That is close.

Mr. **Regula.** You could get $3.5 billion for the Naval Petroleum Reserves, right?

Secretary **Herrington.** Yes.

Mr. **Regula.** It is an interesting tradeoff.

Secretary **Herrington.** Actually, you might get more for the Naval Petroleum Reserves. That is the number that was put in for balancing purposes. It is somewhere between $3 billion and $5 billion. You have about $1.3 billion in revenues coming in this year, and it decreases the next ten years to about $.5 billion to the government. So you have a declining revenue stream, you have increasing expenses on enhanced recovery——

Mr. **Regula.** Is that net revenue you are talking about?

Secretary **Herrington.** Gross. Plus you would have to factor in what the purchaser would pay, which has to be looked at seriously, and what tax revenue you get based on the new tax bill. So there is a lot of balancing that has to go on.

Mr. **Regula.** Well, I like the idea of SPR, and I recognize the budget constraints——

Mr. **Yates.** You have to balance it yourself.

CLEAN COAL PROGRAM

Mr. REGULA. Looking at the priorities. We will have to address it. Mr. Chairman, could I pursue the clean coal program?

Mr. YATES. Yes, please do.

Mr. REGULA. Mr. Secretary, I, first of all, want to congratulate you and express my appreciation that you didn't propose any deferral on the clean coal program. I was interested in this morning's Washington Post, of course, and I mentioned to you, aides urged President Reagan to endorse the acid rain report. The thrust of the Post report is that the Lewis Report is talking about five billion, and it mentions the fact we have the $400 million over a three-year period. I am again appreciative of the fact that is not proposed for deferral.

I would be interested in any comments you have on the article and the seeming thrust of it that the administration feels they need to address, in part, the recommendations of the Lewis-Davis report.

Secretary HERRINGTON. This was a Tuesday meeting, and at the conclusion of the meeting, the President said he would take it under consideration. He has not made a decision on it. I would like to defer expressing my personal feelings until he has made a decision. I was present and participated extensively in this meeting, and the article is right in some parts, but it has major omissions in it.

Mr. YATES. Could you tell us what the omissions are?

Secretary HERRINGTON. I prefer, Mr. Chairman, not to comment until the President has made a decision as to what extent he will embrace the report or how this proposal will come from the administration to the Congress. One of the things we need to look at, and I think he would like more information on, is how much we are spending today not only in the Department of Energy, but also in the Department of the Interior, EPA, and Department of Agriculture on acid rain. The figure could go as high as $390 million government-wide on acid rain. You will remember there is a question about what causes acid rain. Do we now accept the fact acid rain is only caused by coal burning? I don't think that is so.

The next question: What does acid rain do? I don't think that is settled. A lot more information has to come in before he can make his decision, and I think he will be taking more input into it.

Mr. REGULA. I might add, too, the state activity is something you should consider. In Ohio, for example, the voters approved a $100 million bond issue to address clean coal, and so there are, in addition to all the things you mentioned, several programs at the state level that are addressing acid rain. That is part of the total national effort, and should be added to any evaluation, which is to some degree your point of view. We ought to look at what is being done and include the states therein.

The second question, I am confident you are aware of the conference held yesterday on the clean coal program, and one of the things that came up at the conference was a concern about the revenue or recovery requirements in your program opportunity notice that went out Monday. Many were concerned because of what it would do in terms of their rate, and the state PUCs.

It appears DOE has not drawn a distinction between project participants or equipment manufacturers and those who will likely comprise the largest group of sponsors, namely the regulated industries. It appears that the way the PON is written, your agency believes that equipment vendors and the regulated utility industry operate under the same rules, and that, of course, is not totally accurate. It would appear that you view this program as a loan and not a grant program, as we intended.

Are you considering some adjustment in your PON to address this problem?

Secretary **HERRINGTON**. There has been a lot of misinterpretation of that. I think we need to clarify the document that went out. I don't think it is clear and needs some clarifying, and we will do that. In fact, we are doing it right now. We do not consider this a loan program versus a grant program. I think that would be a frustration of congressional intent. I would like to make that point clear, if I could.

Mr. **YATES**. Mr. Secretary——

Mr. **REGULA**. Excuse me, Mr. Chairman.

Mr. **YATES**. I am sorry. I thought you had concluded. Go ahead, take your time.

Mr. **REGULA**. One more follow up. Will there be a revised statement on the PON, so it is clear to those who would submit proposals as to what the conditions will be?

Secretary **HERRINGTON**. Yes. There will be a revision or clarification. I don't know exactly what form it will take. I don't want to give the impression here today that we are giving up on recoupment of money from a successful venture. I think under certain circumstances, it is reasonable for the government to get its money back, if a successful business venture takes place and they are able to pay it back.

Mr. **REGULA**. I think you are using "successful" synonymously with "profits". Would that be a fair statement?

Secretary **HERRINGTON**. Yes, but it would depend at what point you figure the profits and whether you are talking gross or net and how those computations are made. There has to be a lot of clarification.

Mr. **REGULA**. I think it is important, for the prospective bidders at this point who are a little uneasy as to exactly what the conditions are. If you can get those clarified, it seems to me it is important we get on with this program and deal with what is obviously a difficult problem.

Secretary **HERRINGTON**. One of the things we don't want to do is discourage bidders in the program, especially small businesses that want to get into it.

Mr. **REGULA**. Thank you, Mr. Chairman.

NAVAL PETROLEUM RESERVES OPERATION

Mr. **YATES**. Okay. Let's go back to the Naval Petroleum Reserves. Your budget says running an oil field is a commercial, not a governmental, activity. Private owners are likely to run the fields more efficiently than the Government does.

Now, how could the private industry run the reserves more efficiently when Elk Hills, for example, has an operating agreement with Chevron? Chevron runs that oil field. Do you think that Chevron is not private industry and doesn't run it efficiently?

Secretary **HERRINGTON**. I don't think the government does as good a job as private industry would do based on a profit margin with the various regulatory——

Mr. **YATES**. What does Chevron pay——

Secretary **HERRINGTON**. Twenty-two percent in the field they own.

Mr. **YATES**. You mean we can accuse Chevron of not running the operation as efficiently as it would if it owned it?

Secretary **HERRINGTON**. Our operating contract is with Bechtel. It is approximately a $750 million contract.

Mr. **YATES**. Bechtel, then. Bechtel is supposed to be a pretty able corporation, isn't it?

Secretary **HERRINGTON**. They certainly are. They have done a good job.

Mr. **YATES**. If they owned it, they would do a better job?

Secretary **HERRINGTON**. I don't think Bechtel would buy it. They are not in that business.

Mr. **YATES**. If they were given the opportunity, I bet they would buy it. They are in the business now if they are running it, aren't they?

Secretary **HERRINGTON**. Yes, I think you could say that for sure.

Mr. **YATES**. Both Elk Hills and Teapot Dome are run by commercial contract. The Government isn't running it, as a matter of fact.

Secretary **HERRINGTON**. That is right, but the GOCO operations are not efficient, and I am not sure they are a legitimate——

Mr. **YATES**. What is a GOCO operation?

Secretary **HERRINGTON**. Government-owned-contractor-operated. It is not done as well as the company can do with its own assets.

Mr. **YATES**. What is the difference? The company presumably is running it efficiently for the Government, otherwise the Government wouldn't have the company there, isn't that right?

[No response.]

[**COMMITTEE NOTE**.—The department subsequently provided a response as follows:]

OPERATION OF NPR 1 AND 3

The Government is running both Elk Hills and Teapot Dome. At Elk Hills, the Government and its partner, Chevron, have their personnel on site and make all management decisions. At Teapot Dome, which is owned solely by the Government, the Government has personnel on site and makes all management decisions.

FOSSIL RESEARCH CUTS

Mr. **MURTHA** [presiding]. While we are looking through the questions, Mr. Secretary, if I could ask you a couple questions about fossil research. I saw in your budget, you are cutting back on fossil research by about half. Can you give me your reasoning for that? Or am I wrong?

Secretary **HERRINGTON**. I think that is—was it 53 percent? I think it is 53 percent across the board in that particular area.

Well, budgetary constraints are the first reason, less money to go around. Two, we are focusing on some of the programs we think are winners and some that are losers. There are a number that are complete, programs that are over with, we have learned all we are going to learn, we have reached our goal at this point. So basically that is my explanation.

Mr. **Regula**. Mr. Chairman, will you yield?

Mr. **Murtha**. Sure.

CLEAN COAL PON

Mr. **Regula**. What is your timeframe on the revised PON?

Secretary **Herrington**. I think we are working on it today.

Mr. **Regula**. So it will be out on the street in a week? A couple of days?

Secretary **Herrington**. Not a week.

Mr. **Regula**. So you are saying right away, a couple of days?

Secretary **Herrington**. Yes. Hopefully this week. Today is Thursday. It needs to be clarified, sir.

FOSSIL RESEARCH CUTS

Mr. **Murtha**. There is a thing that worries me, and it worries me about every administration. Legitimately they are worried about the short-term balancing the budget. I don't mean balancing necessarily limiting the deficit, but trying to balance the priorities about the amount of money they have available.

Fossil research gets hurt year after year. Here we have this vast resource available to us. I remember the traumatic experience we had in this committee sitting here and listening to various secretaries wanting to expend large sums. We had such a problem in trying to decide how it was going to be done properly.

One of the things that I predicted would happen if we followed programs through the Defense Department and in the Energy Department, was that if we didn't have enough taxes to overcome the loss of revenue from our tax cut several years ago, we would start cutting back on research, basic research, which is so important to the country and the Government. Only the Government does it. Fossil research falls right into that, and my prediction is coming true. I am worried about it, because here we have this resource available to us, the price of oil is down. It seems to me that we should be buying the oil to put in the Strategic Petroleum Reserve to get us through the short-term, but to get through the long-term we are going to have to spend money on fossil research.

And I think you probably understand that we are going to change these priorities and come to some accommodation with you. But I would hope, Mr. Secretary, that in the years that you are in this job that you will look again at more than just the short-term gains and not necessarily look at OMB and just accede to their suggestions, because it really seems to me the job of Secretary is much more than just taking care of the short-term benefits. It is looking to the national security and the long-term benefit to the country.

And it really worries me when I see year after year such a disagreement and then an accommodation with Congress. It is almost as if when you take out programs that Congress is interested in, you know it is going to be put back in, and I can accept that if that is the reasoning.

Defense is something I agree with most of the time with the administration, but I would urge you, Mr. Secretary, to look at these fossil research programs and see if we can't come to a better accommodation instead of you coming before the committee with the cuts that you are recommending to us.

Secretary **Herrington**. Mr. Chairman, I couldn't agree more, and during the budget process, I think you will find not only myself, but in the department strong advocates within the budget process of the administration. We do not have the last say in this budget, but once it is agreed to by the administration, we are team players and advocate that budget.

I think that the budget is a good budget. I think it is well balanced, I know it is lean. I am not going to sit here and say every program is as healthy as it was, but I think we have done a good job on it, and there is a lot to talk about on the positive side.

Mr. **Murtha**. I know you have a difficult position, and I know when you work for the administration you have a different obligation than we do as elected officials. Congress has a different responsibility. But what I am focusing on is the short-term gain and the long-term loss to the country. You probably do argue down there until you are overridden, and I would hope if you do that, you continue it. But I am really concerned that every single year we have this same problem with a resource that is so important to us and so available to us. I would hope that we could come to an accommodation, looking at the long-term needs of the country.

SPR STANDBY

Let's ask some technical questions about SPR, Mr. Secretary, and if you don't mind, we will stay until 12:30 and try to finish up this morning if it suits you. What portion of the funds do you estimate would be used to put the SPR in a stand-by condition?

Secretary **Herrington**. That is pretty technical. We will get done——

Mr. **Murtha**. Submit it for the record.

Mr. **Bauer**. We will submit it for the record.

Mr. **Murtha**. We should have an answer for it, if you have it. Do you have it available here?

Mr. **Bauer**. I will have to look for it. I don't have it off the top of my head.

Ms. **Hesse**. I think it is about $200 million to maintain and operate the entire system. The cost of putting the system into standby is minimal.

Mr. **Murtha**. Have you submitted a reprogramming to carry out such activities, since the appropriations funded were not provided for stand-by operations?

Secretary **Herrington**. No, we have not, Mr. Chairman.

Mr. **Murtha**. What did you say?

Secretary **Herrington**. No, we have not.

Mr. **Murtha**. Are you going to submit a reprogramming?

Ms. **Hesse**. Yes.

Mr. **Murtha**. When can we expect that?

Secretary HERRINGTON. We are thinking within 30 days we can do that.

Mr. MURTHA. Based on the current state of facilities at the Big Hill site, how long will it take to restart activities if you were to do so?

Secretary HERRINGTON. We estimate five months.

Mr. MURTHA. Have you cancelled construction procurement yet?

Secretary HERRINGTON. The contracts we had in effect we are finishing. We also acquired the permit for the salt water line from the projects. We are able to go ahead if we need to, if there are no roadblocks. We did stop procurement.

Mr. MURTHA. Wouldn't it make more sense, even if you did not fill and leach the Big Hill site, to complete the construction of these sites, to start the filling and leaching process?

Secretary HERRINGTON. I don't think so. I think that we can complete those in adequate time to begin the leaching and filling if that becomes necessary. At the existing facilities, we are at 509 capacity, we have the capability to go to 610, at that, while we are constructing Big Hill, if that were necessary.

Mr. MURTHA. How long would it take?

Secretary HERRINGTON. Which ones?

Mr. MURTHA. To complete this process you are talking about.

Secretary HERRINGTON. About a month to resume leaching and 18 months to complete the leaching for a 600 system.

Mr. MURTHA. In other words, you can have it taken care of in a month, and that would offset the shutdown?

Secretary HERRINGTON. Yes, a month to resume leaching.

Mr. MURTHA. How much would it cost to complete the Big Hill facilities?

Secretary HERRINGTON. Let me get that figure. A little under $200 million, I am pretty sure. We would like to submit that for the record.

[The information follows:]

COSTS TO COMPLETE BIG HILL

The Department has not revised its cost estimates for Big Hill to reflect the cancellation of the Big Hill procurement actions on January 31, 1986, or any other factors which may influence the costs of Big Hill development. Based on our most recent information, which was developed in August 1985 in conjunction with Congressional action, we estimated that it would cost approximately $247 million during the FY 1986–FY 1991 period to complete Big Hill, over the estimated costs for a moratorium. Of this amount about $151 million would have been for construction and $96 million would have been for incremental operating costs associated largely with solution-mining activities.

STRATEGIC PETROLEUM RESERVE STANDBY ACTIONS

Putting the SPR facilities in standby will require temporary security fencing at Big Hill and some preventive maintenance actions that would not otherwise be required; however, the cost of such actions will be minimal. The FY 1987 budget request itself is a reprogramming proposal for FY 1987 to use the unobligated Phase III funds in the Non-Phase Specific and Management budget categories in order to convert to and maintain a standby condition. A reprogramming will be submitted for the FY 1986 activities.

While leaching operations (capacity development) at the West Hackberry and Bryan Mound sites could be resumed in approximately one month, construction activities at Big Hill would resume in five to six months, following procurement of new construction contracts (three to four months) and mobilization of construction contractors (one to two months). It would take approximately twelve more months before leaching could commence at Big Hill.

DISTRIBUTION CAPABILITY

Mr. MURTHA. Congress asked the department to review distribution alternatives with the goal of increasing capability to at least four million barrels a day. What are the results of that report?

Mr. BAUER. We just submitted the report.

Secretary HERRINGTON. We have submitted that report.

STATE CONSERVATION PROGRAM

Mr. MURTHA. The state conservation program. The fiscal year 1987 budget proposes to cease funding low-income weatherization, schools and hospitals grants, state conservation grants and energy extension service by direct appropriation. This is based partly on a distribution of oil overcharge funds directly to the states from the Exxon case. What is the estimated amount of the distribution?

Secretary HERRINGTON. It varies from state to state. A state like California, a large state, almost $200 million. I can give you a list of what we project by state.

Mr. MURTHA. Yes. Submit a list for us.

[The information follows:]

CALCULATION OF RATIOS AND DISTRIBUTION OF EXXON HAWKINS FIELD REFUND FEB. 27,1986

STATE	CONSUMPTION	RATIO	DISTRIBUTION OF REFUND $2,095,772,859.04
CALIFORNIA	3,127,539,930	0.092791628503896	$194,470,176.56
NEW YORK	2,567,901,480	0.076187599678948	$159,671,903.60
TEXAS	2,524,734,890	0.074906881199660	$156,987,808.57
FLORIDA	1,575,912,920	0.046756086093241	$97,990,136.23
PENNSYLVANIA	1,554,857,580	0.046131390859597	$96,680,916.91
ILLINOIS	1,543,644,130	0.045798696694235	$95,983,665.51
OHIO	1,280,786,380	0.037999915788704	$79,639,192.16
NEW JERSEY	1,211,601,780	0.035947263593983	$75,337,299.40
MICHIGAN	1,140,263,460	0.033830712235507	$70,901,488.51
MASSACHUSETTS	1,129,814,330	0.033520694838175	$70,251,762.46
VIRGINIA	857,337,750	0.025436530877598	$53,309,191.04
INDIANA	829,302,000	0.024604732417129	$51,565,930.40
LOUISIANA	827,774,180	0.024559403209818	$51,470,930.68
NORTH CAROLINA	755,391,370	0.022411862661683	$46,970,173.49
GEORGIA	748,897,420	0.022219192317128	$46,566,380.21
MISSOURI	666,833,430	0.019784418838911	$41,463,648.03
WISCONSIN	593,756,060	0.017616271246601	$36,919,703.16
MARYLAND	584,912,500	0.017353889837398	$36,369,811.32
MINNESOTA	579,294,760	0.017187215948406	$36,020,500.71
CONNECTICUT	560,567,210	0.016631584397321	$34,856,023.18
TENNESSEE	555,796,240	0.016490033502447	$34,559,364.66
ALABAMA	517,068,450	0.015341010697659	$32,151,273.85
WASHINGTON	515,936,850	0.015307437023408	$32,080,911.06
MISSISSIPPI	455,817,030	0.013523729659787	$28,342,665.57
KENTUCKY	440,718,610	0.013075771516648	$27,403,847.06
IOWA	440,478,260	0.013068640522829	$27,388,902.11
OKLAHOMA	421,373,970	0.012501831394828	$26,200,998.93
ARKANSAS	416,802,930	0.012366212264441	$25,916,772.03
SOUTH CAROLINA	404,562,520	0.012003049010613	$25,155,664.34
KANSAS	384,820,050	0.011417305588310	$23,928,079.18
COLORADO	364,861,940	0.010825164298283	$22,687,085.53
ARIZONA	346,386,420	0.010277010277351	$21,538,279.21
OREGON	332,831,280	0.009874840027458	$20,695,421.72
PUERTO RICO	322,106,000	0.009556629478708	$20,028,524.69
NEBRASKA	249,040,010	0.007388819521971	$15,485,287.41
MAINE	242,445,430	0.007193163565150	$15,075,236.97
HAWAII	232,610,950	0.006901382345689	$14,463,729.81
NEW MEXICO	219,932,280	0.006525216265352	$13,675,371.15
WEST VIRGINIA	207,246,440	0.006148837456804	$12,886,566.66
UTAH	200,043,500	0.005935131941423	$12,438,688.44
VIRGIN ISLANDS	159,836,000	0.004742207314855	$9,938,589.38
DELAWARE	159,732,630	0.004739140408964	$9,932,161.84
NEW HAMPSHIRE	157,367,780	0.004668977185606	$9,785,115.67
MONTANA	153,948,650	0.004567534311057	$9,572,514.44
WYOMING	142,540,150	0.004229053166937	$8,863,134.85
NEVADA	140,819,740	0.004178009967117	$8,756,159.89
IDAHO	139,590,430	0.004141537314684	$8,679,721.50
ALASKA	132,872,040	0.003942208013387	$8,261,972.56
RHODE ISLAND	128,580,700	0.003814887360102	$7,995,137.39
NORTH DAKOTA	124,021,620	0.003679623073427	$7,711,654.17
SOUTH DAKOTA	120,496,820	0.003575045053810	$7,492,482.39
VERMONT	80,393,290	0.002385205134659	$4,998,848.18
DISTRICT OF COLUMBIA	73,941,550	0.002193787127316	$4,597,679.52
GUAM	49,787,000	0.001477140791716	$3,095,751.58
AMERICAN SAMOA	5,963,420	0.000176929940349	$370,804.97
NO. MARIANA ISLANDS	3,084,890	0.000091526238917	$191,818.21
TOTALS	33,704,979,430	1.000000000000000	$2,095,772,859.04

USE OF EXXON FUNDS

Mr. **Murtha**. And when will the states start receiving the funds?

Secretary **Herrington**. Next month.

Mr. **Murtha**. On what basis will the funds be allocated?

Secretary **Herrington**. The Warner Act and court order. It applies to five categories of usage.

Mr. **Murtha**. For what programs must the funds be used?

Secretary **Herrington**. I don't have them off the top of my head, five programs specified in the Warner Act that was passed on distribution. Here they are. I can read them into the record or give them to you.

The first one would be the state energy conservation program; the second one, the energy extension service; third, the institutional conservation program; fourth, the weatherization assistance program, that would be the low-income—incidentally the HHS program on low-income is still in full force and effect; and finally, the HHS low-income home energy assistance program, and that would be the eligible households, helping them to weatherize their homes. Those five would be the guidelines the states would have to follow.

Mr. **Murtha**. How will you monitor this use?

Secretary **Herrington**. We do not intend to monitor it at this point. The reason is it is the law, and I think I have to assume that the states will follow the law——

Mr. **Murtha**. You won't monitor—they have an obligation to monitor?

Secretary **Herrington**. I think they have to report back to us on how they spent the money, and there is acknowledgement in the distribution that they will abide by the Warner Act terms. We do not have the personnel or the funds at this time to monitor that program.

Mr. **Murtha**. In a sense, you are monitoring it, then. They may be overseeing it, but they are sending you a report of some sort of how they spent the funds, or does that not go to the Energy Department?

Secretary **Herrington**. An annual report in the past has come back, and I believe we are requiring that under this distribution, but I would like to check and submit that.

Mr. **Murtha**. If you don't have a responsibility, we would like to know where the responsibility is, because certainly somebody must have responsibility to check on the program.

Secretary **Herrington**. The court order requires distribution under certain conditions and effects. I think the responsibility is with the states, themselves, and the court, to make sure the law is obeyed. It is like any other law. I don't think the Energy Department can be in a position of—at least we can do what we can for monitoring and information.

GREAT PLAINS GASIFICATION PLANT

Mr. **Murtha**. The Great Plains gasification plant. What is the status of the Great Plains plant?

Secretary **Herrington**. The plant is under foreclosure in court in North Dakota. It will probably come to foreclosure sometime in April or May. The loan is in default, and we will have to seek a supplemental appropriation for the amount of money we owe to the Treasury, approximately a little over $1 billion. We have paid some of our set-aside money on the loan deficiency already, so the exact balance I don't have here this morning, but it is substantial.

Mr. MURTHA. Was there no outlays associated with this? Is this just bookkeeping?

Secretary HERRINGTON. It is bookkeeping right now. We had to go to court to enforce the contracts for the purchasers of the gas. If we had not won that lawsuit, we would have had to close the plant.

Mr. MURTHA. The pipeline companies are paying?

Secretary HERRINGTON. Under the court order, they are now paying their obligations under the contract, and we are still able to operate the plant.

Mr. MURTHA. The court suit is finished?

Secretary HERRINGTON. No, we have to go to court in April or May on foreclosure, and there are further affidavits required by the court on what is owed between the parties and the difference in the payments they have made under what they call market prices versus contract price. It is an extremely complicated lawsuit.

But it is coming to an end, and it looks like it is coming to an end favorable to the government. It doesn't look like we are going to have to ask for operating money on that.

Mr. MURTHA. Who handles that? Are Justice Department lawyers assigned?

Secretary HERRINGTON. Yes. We have a good team of lawyers from the Justice Department plus our own General Counsel's office, and we are watching it very carefully. We do not want to have that become——

Mr. MURTHA. Are you making a profit on the plant?

Secretary HERRINGTON. I doubt it. I think in the long run we are going to lose money on the plant. It depends on what we can sell it for.

Mr. MURTHA. How long do you intend to operate the plant?

Secretary HERRINGTON. As long as we possibly can, so long as it does not cost the government any money. We do not go into appropriated funds or ask Congress for money for operation, we do not want to do that, and we will run it up until we get a foreclosure. We have issued a call for statements of interest for anyone who might be interested in acquiring the plant.

Mr. MURTHA. You say you are trying to dispose of it. What are your plans for disposal?

Secretary HERRINGTON. We have a statement of interest out now to see who is interested in what kind of proposals, and it would be our intention to move on those after the foreclosure.

Mr. MURTHA. Do you consider this a technical success?

Secretary HERRINGTON. Oh, yes.

Mr. MURTHA. The operation?

Secretary HERRINGTON. Yes. It is strictly—what happened was it was a beautiful plant, it cost $2 billion. It was pumping out gas at $6 into a market of $2.20 and $1.80. That is the difference.

Mr. MURTHA. The gentleman from Washington.

BONNEVILLE POWER ADMINISTRATION

Mr. DICKS. Mr. Secretary, I wanted to raise a couple of questions with you. One is in your statement, you talk about the potential sale of the Bonneville Power Administration. I would just like to get your reaction. Those people who have really looked at this thing and studied it are now saying this would be a much more complicated sale than it originally had been anticipated. BPA has something like 10,000 individual contracts with various entities in the Pacific Northwest, all of which give the parties that we are contracting with a right to renegotiate if for some reason the Federal Government was not to be the contracting party. In other words, if we sold to a private company or to a consortium in the Northwest, say, of public entities, then these all would have to be renegotiated.

And I was just interested in how much real study has been done by the department in terms of what would be entailed in this sale, because I think there is a consensus, both in the House and in the Senate, that this is going to be a much more complicated transaction than was originally anticipated.

Secretary HERRINGTON. I think, Mr. Dicks, you raise a very good point. The sale of these Power Marketing Administrations is, indeed, one of the most complicated transactions, I think, that we have seen in a long time, certainly a lot more complicated than the sale of ConRail or some other asset. We are only beginning, we are looking at it very carefully.

Because of the complexity of this, it is something you can't move fast on. You have to take into consideration a number of things. You brought up one major factor, and that is the contracts that are in full force and effect. I think there are a lot of other——

Mr. DICKS. You have the preference clause question, how do you deal with that—WPPSS, the WPPSS bond question, which I think is also a very complicated one and would be of considerable interest to other people in the country worrying about the fact you might not have the Federal Government standing behind the net billing arrangements on the first three plants.

So, you don't see this as imminent. In other words, your statement is that it is going to take some time to really study this matter before there would be serious efforts to sell it to anyone, either private or public.

Secretary HERRINGTON. Yes, sir, I do.

Mr. DICKS. I think that is a very prudent course. My own judgment is, not as some of my colleagues thought, that this would be a matter that could be dealt with. I think a large part of that was the fear on their part that there was an effort to sell it to a private entity and, therefore, they were trying to look at other alternatives. But I think the hearings that have been held indicate that this is a very complicated matter and one that is going to take an enormous amount of study.

The bottom line is, we want to make certain the consumers of electrical energy and the industries in the Northwest are not going to be harmed. One thing that I worry about is that we are creating a period of uncertainty in which people are going to say, for example, we have the aluminum companies in the Northwest which are major users of electrical energy, there is a situation now where some of these companies may have to shut down some of their plants and some of their operations.

What I worry about is, as long as there is this idea hanging over the region that we might sell Bonneville, that it is going to create uncertainty for those companies, and that it could adversely affect some of the industrial customers of Bonneville, which means it will be more complicated and more difficult for us to pay back on the schedule that I know that you are interested in seeing BPA maintaining. I am too. I would like to point that out.

I hope we can do a thorough study, but at some point, we need to make a decision whether we are going to do this or not so that uncertainty can be eliminated.

Secretary HERRINGTON. Well, I think the point you brought up on the aluminum industry is one of the biggest, as most of the aluminum industry is located in that area, and it is a national asset. I think a decision has been made on the part of the administration. I don't think there is any uncertainty. I want to be strong in my testimony in that we are heading toward a sale in 1988, if we can get the right price, if it can be done in a sensitive manner, if we can protect these various industries and interests that you have brought up and if we can solve the complicated problems.

Mr. DICKS. But if you ran into major problems, where it looked like you couldn't solve some of these issues, wouldn't you then have to reconsider the 1988 time table?

Secretary HERRINGTON. The administration is not proposing to do something foolish. That is the last thing we would do. If everything is aligned, we would like to head for a sale in 1988. But as you pointed out, if we bring up or we encounter difficulties unforeseen at this time, we would not stick by our time table just because it was a time table.

Mr. DICKS. All right. Secondly, in your budget this year, you say you want to put Bonneville on a repayment schedule that would be, I think, over a 50-year period and would involve an increase in that repayment schedule. What I would like to ask you is, are you aware of the fact Bonneville has been paying back and has made an enormous effort? You have a good man out there in Peter Johnson. And under tremendous pressure, both from the administration and Congress, there has been a substantial increase in rates in the Northwest, and we are now back on a repayment schedule that we feel keeps us up to snuff on what is owed the Federal Government.

And so, again, we are concerned that if we are forced to go to this new schedule we are going to wind up having to increase rates again at a time when we have already suffered a 700 percent rate increase over the last several years. So I just would hope that we could make it clear to everybody, when we are testifying up here in Congress, that the BPA has gotten back on a repayment schedule, we are up to date, and we frankly don't see this as being the right time for another increase. We have assumed major rate increases because of WPPSS, and we think at a time when our economy out there in the State of Washington is still very fragile that this additional rate increase is going to make it harder again for those aluminum companies to stay there. They are major users of energy;

and other industrial customers, particularly the forest products companies, have been badly hurt. I want to point that out to you.

We have worked real hard to get back on schedule, and this seems a little bit like piling on after you have done a real good job.

Secretary HERRINGTON. That certainly is not the intent, and I would agree with you, Peter Johnson is an outstanding administrator and under a great deal of pressure. I think one thing we should note for the record, that the administration is going to move legislatively on the repayment schedule——

Mr. DICKS. That is the point I wanted to get to.

Secretary HERRINGTON. Not administratively.

Mr. DICKS. As I understand it, you made a pledge, I think, in your confirmation hearings on this subject that you would seek legislation, you would not move administratively either in this respect or in changing the interest rates for repayment as well. Is that correct?

Secretary HERRINGTON. That is correct.

Mr. DICKS. I am pleased to hear that, because I think Congress has a right to take a look at this in terms of legislation. Have you got the legislation drafted, or do you have anybody who is going to introduce it?

Secretary HERRINGTON. I think we are very close. The interest rate payback system is based on existing rates, not last year's proposal.

Mr. DICKS. As far as I know, it has not been introduced yet.

Secretary HERRINGTON. No, sir.

Mr. DICKS. You are looking for someone to introduce it?

Secretary HERRINGTON. No, I think we will be able to find someone.

Mr. DICKS. You think you will? We will have to wait and see about that. We will talk to our colleagues. I am sure you will be successful in that. We appreciate the fact that you are moving legislatively and not using the administrative authority that you do have.

SHIPMENT OF NUCLEAR WASTE

One other subject which has been of considerable interest in the State of Washington, and this involves a shipment of nuclear waste material, nuclear fuel rods, from the Orient back to the State of Washington and then to California. And this has become a very controversial matter in our state. The Governor of the State of Washington wrote you a letter on February 7th, I wrote you a letter on October 4th, and I think the real problem here has been that this all came upon the state officials, myself, and other members of the delegation as a complete surprise, and we understand that it is a very sensitive matter.

But my own judgment is that the department would have been better served, at least with the state officials who have authority, to have been more candid about the fact that the shipments were going to occur. As you know, the State of Washington is playing a major role at Hanford in handling military waste. It is one of the sites under consideration for being a repository for high-level waste.

In Puget Sound, which is in my own judgment a national asset, there is very substantial concern about these shipments, and I just want to express my personal concern here today and ask you if you can tell us what the status is on the administration's decision? We were told that these would not be in the State of Washington, they were going to go to California. Now we read in the press, there is some concern in California about this as well. Could you give us a status report on this shipment question?

Secretary HERRINGTON. I can't. The issue is classified. I would be happy to do it for you in a different session or a different environment. The point you make, that Hanford has been a strong supporter of the DOE activities, I could not agree more. We have had wonderful cooperation out in that state. If we were not sensitive to the officials in Washington, I guarantee you we will be in the future. It is simply an oversight.

The area you are referring to, they try very hard for good local relations. So we would be happy to update you on the situation. I prefer to do it outside the public hearing.

Mr. DICKS. That is fine. We can get into that in either a classified session or I can just do it privately. I just want to emphasize again that there are some laws that we believe need to be complied with. One is the coastal zone management plan for the State of Washington, created under Federal legislation, and in our judgment the department has not demonstrated that its proposed activity will be consistent with the coastal zone management plan.

And, secondly, the Department of Energy's proposed shipment of these wastes may not be in compliance with the Nuclear Nonproliferation Act. We can get into that in a closed session, but I just feel that in these situations you are much better off to sit down with the top people in the state rather than letting this thing kind of just leak out as it did in this particular case.

Again, I want to emphasize how sensitive Puget Sound is and how concerned people are up there about it. I hope you will take that into consideration in whatever decision is made.

Secretary HERRINGTON. Yes, sir.

Mr. DICKS. Thank you, Mr. Chairman.

NUCLEAR WASTE DISPOSAL

Mr. MURTHA. Mr. Secretary, let me ask you about nuclear waste sites. Last year a site in Davis Canyon, Utah, was chosen as a site for the first high-level nuclear waste repository. What is the status of that site selection process?

Secretary HERRINGTON. We have had five sites for the first: Mississippi, Utah, Nevada, Texas, and Washington—the National Academy of Sciences is reviewing the work that we did in characterizing those sites for selection to see if they agree with the process, if every possible care was taken in the ranking of the sites. Their report is going to be finished the first part of April, and we expect to recommend to the President in April three out of the five sites nominated. We pretty much know what those three sites are.

Mr. MURTHA. Is Davis Canyon still in consideration?

Secretary HERRINGTON. It is in consideration, but ranked below the top three.

Mr. **MURTHA**. I guess we have covered the deferral question thoroughly.

COOPERATIVE RESEARCH AND DEVELOPMENT VENTURES

Would you explain the cooperative research and development ventures, how you anticipate fossil energy research and development will work, and how these ventures will work?

Secretary **HERRINGTON**. It would be very similar to the clean coal program in that we would like to pick projects the industry tells us are most promising rather than have us select projects. So we are soliciting industry input into what projects they would like us to jointly fund with them. It is almost the same as the clean coal—a different direction a little bit. But it is a pilot program, it is only $12 million, it is new.

Hopefully, we will get two things out of it: One, we can lever that $12 million to $24 million if we get 50–50 cooperation, maybe more if we get better than a 50 percent share. The other thing is we get a better technology transfer. We are going to look for that in the projects we accept.

Mr. **MURTHA**. How successful have these ventures been in industry?

Secretary **HERRINGTON**. They have been successful because you have projects industry is interested in, not just projects the government is interested in. So if you have industry which is actually out there in the trenches making money and working on these things, coming in and saying "We need help in this area", that is a Federal indicator.

Mr. **MURTHA**. In what areas will you seek these ventures?

Secretary **HERRINGTON**. It is hard to say. I am looking at one that we are interested in particularly, and that would be extraction technologies.

Mr. **MURTHA**. Give us some examples for the record of what you anticipate.

Secretary **HERRINGTON**. I think we could.

[The information follows:]

TECHNOLOGIES ASSOCIATED WITH COOPERATIVE VENTURES

The intent for FY 1987 is to initiate, as a pilot effort, a cooperative venture program in the Department focusing on extraction related technologies of Fossil Energy's Office of Oil, Gas, Shale and Coal Liquids. This specifically includes technologies and resources of underground coal gasification, oil shale, enhanced oil recovery, tar sands and petroleum coal co-processing. However, even in the pilot program, the Department does not intend to *arbitrarily* preclude any Fossil Energy technologies. If the program is successful in accomplishing the Department's energy goals, we envision it will be expanded to include additional technologies and resources and could become a prime method for accomplishing the Department's energy research and technology development missions.

Mr. **MURTHA**. Would these ventures be different than the cost sharing research-development projects normally funded by DOE?

Secretary **HERRINGTON**. I think they would be obviously 50–50. Many of our projects go to universities, or otherwise, that are not 50–50 ventures. We have a lot of projects where we put up all the money, and the industry puts up none. I think these will have more of a thrust and more of a practical application than some of our pure R&D projects.

Mr. **Murtha**. Don't we have a problem with all the instability we have here, with industry wanting to go along because they would be concerned about deferrals and rescissions and so forth, or you don't see that as a problem in dealing with industry?

Secretary **Herrington**. Not in this program. I think anybody that deals with the Federal Government has problems in that area, especially at budget time. You have to be careful. It is not a risk-free venture to do business with the Federal Government.

Mr. **Murtha**. How will the patent rights and inventions be handled compared to normal Government research?

Secretary **Herrington**. Normally today patent rights go to the contractors that work in our operations for development. We work on technology transfer. I don't think we know in this proposal how we are going to handle that. It is something we have to look at in negotiating at the time.

Mr. **Murtha**. Has there been any previous industry interest or push for this type of activity or is this Government-originated?

Secretary **Herrington**. I think it is Government-originated. I don't know of any industry interest.

Mr. **Murtha**. The Department of Commerce has been pushing such ventures. Is your program the same as theirs in principle?

Secretary **Herrington**. I think it is similar.

Mr. **Murtha**. What result has their program got? Do you know offhand?

Secretary **Herrington**. I would like to submit that for the record.

[The information follows:]

SUCCESS OF THE DEPARTMENT OF COMMERCE COOPERATIVE VENTURE PROGRAM

The Department of Commerce, Office of the Assistant Secretary for Productivity, Technology and Innovation, has informally advised us that their program has been immensely successful. Sine 1983, the private sector has raised over three billion dollars in R&D limited partnership funding for cooperative ventures. And, since the cooperative venture act was passed in 1984, numerous industrial/university collaborative efforts have been formed and over 40 major consortia have registered with the Department of Justice as required by the Act.

Mr. **Murtha**. You will answer the employment floors for the record.

Mr. Regula?

Mr. **Regula**. Thank you, Mr. Chairman.

Mr. Secretary, we have a lull now with adequate energy supplies and so on, yet I don't think this can be a permanent condition. I guess my question would be, do you think we need to be doing anything beyond what we are doing in research to develop so-called energy independence during this period when we are not in a crisis situation?

Secretary **Herrington**. Yes, I do.

Mr. **Regula**. Do you think the programs we are currently supporting are adequate given the future?

Secretary **Herrington**. No, I don't. I think what you should be doing in addition is full deregulation of natural gas, including repeal of the Fuel Use Act. I think you ought to get busy and pass the Nuclear Licensing Reform Act we have on the Hill, and a number of others. We need to get a wide diversity of energy sources for this country after the year 2000.

We simply cannot rely on one or two sources. I think we have to encourage efficiency and conservation as much as we have done and that does not mean spending more Federal money for the programs. That means keeping the public aware of the need for conservation and efficiency. I think we need to continue to push on clean burning coal technologies. We are sitting on 400 years of coal.

There are more. We have a lot of ideas, but we are not doing enough. We need to do more.

Mr. REGULA. Have you, as a department activity, attempted to summarize, sort of a white paper, if you will, or a blue print for the next ten years, just making an assumption that maybe we have ten years of lack of crisis in the energy field, what we could be doing in a responsible way to put ourselves in the kind of position I believe that you are describing by the year 2000?

It seems to me we ought to do a little thinking ahead here and your department is in a unique position to do that.

Secretary HERRINGTON. The National Energy Policy Plan, or affectionately known as NEPP-5, will be out in a few weeks. It is finished and has been under some discussion. I think it is an excellent document. I think it talks about a lot of things we need to do.

Mr. REGULA. That will be available and circulated to the members?

Secretary HERRINGTON. Yes. It is a very thoughtful document. It is late coming out. It has had a lot of work on it, a lot of input and a lot of disagreements, but it is a good document and it is something we ought to promote and read and push as a country.

SALE OF THE NAVAL PETROLEUM RESERVES

Mr. REGULA. Good. I appreciate learning that and I think we should all look forward to it because it is so easy to be lulled to sleep here at this point in time. How would you react to the idea of a trade-off on the selling a portion, or maybe all of the Naval Petroleum Reserves and filling, the SPR up to at least 750 million barrels? Maybe you would like to answer that for the record.

Secretary HERRINGTON. I am happy to answer it. I think all other things being equal and if we had enough money, it would be fine to do something like that. Maybe you could afford to have both. The problem we are facing today and I think is the biggest one the country has is the $200 billion deficit and I think all of you have to agree with me.

We are all in the same boat here. This takes trust, courage between us, and a lot of hard choices. You take the money out of one part of the Government and put it in another part of the Government. What we are trying to do in this budget is balance all the priorities, but to allocate money from the Naval Petroleum Reserves into the SPR may not solve the problem.

In addition to the five billion barrels you take out of the Naval Petroleum Reserves and put into SPR, you now have a non-income producing asset in SPR where you have a revenue producing asset in the NPR. The person who buys the Naval Petroleum Reserves then begins paying tax revenue and pays into the Federal Government on the money they take out of the Naval Petroleum Reserves. I don't know what the Naval Petroleum Reserves are worth right now, guessing between $3 billion and $5 billion, but reserves are bought and sold on the economy and we can find out.

Mr. **Regula**. If there were a sale of the Naval Petroleum Reserves, would it be done by offering a number of parcels or—I am not familiar with the geographic layout, the topography or anything. Does it have to be sold as a unit?

Secretary **Herrington**. I really don't know. My guess is it would be sold as a unit. It is a field that not only underlies Federal land, but it also goes into some private land. It is an older facility and I think it would be tough to divide up the pool. You might divide up interest in the pool.

Mr. **Regula**. It would seem like it would be a big bite for any one buyer.

Secretary **Herrington**. I don't think so. It is an asset that will be sought after if it is sold and I think we will get a good price for it.

Mr. **Murtha**. Will the gentleman yield?

Mr. **Regula**. Yes.

Mr. **Murtha**. Mr. Secretary, isn't this the wrong time, though, to sell the Naval Petroleum Reserves? I am thinking to myself that by the time you get this put together, the oil prices will probably even be lower than they are now and I assume you are not going to have any agreement with whoever buys it that you are going to keep them, at the price they have got now.

Secretary **Herrington**. That is a very good point to raise. If you say do we have to sell, the reserves at $15 per barrels I would say that is a dumb idea. There are a number of ways you can structure this deal to protect a changing oil price basis. That is done every day in private industry.

Another thing, we are not selling $15 per barrel oil here. We are selling an expected income stream for the next ten to twenty years and there are ways to estimate that and there are ways to protect both parties who enter into a deal to purchase as an asset.

So I think yours is a thoughtful comment on what are we doing selling it at this time, but I think if you look at it as a long-term process and a long-term income stream, I think it is a little bit different picture than just selling when the price is low and buying when the price is high.

Mr. **Regula**. Oil is probably one of the most sought after reserves in industry today. Superior Oil was sold primarily for reserves.

Secretary **Herrington**. Same for Getty.

Mr. **Regula**. I will reserve a number of questions for the record. I have nothing further.

Mr. **Murtha**. The committee will also provide additional questions for the record. Thank you very much, Mr. Secretary.

The committee now adjourns until Monday at 10:00 o'clock. Thank you very much.

[The question and answers for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Naval Petroleum Reserves Sale

Question: The budget assumes selling the Naval Petroleum Reserves to private industry for about $3.6 billion. How did you arrive at that figure?

Answer: While we are assuming $3.6 billion as the estimated proceeds from selling Naval Petroleum Reserves No. 1 and No. 3, we anticipate that the actual sales value could range from $3 to $5 billion. The actual sales price, of course, will be determined by the market. We base this on two different approaches:

(1) We estimate the present value of the cash flows to a private investor from the fields at $3 to $4 billion.

(2) The market for oil fields is $8 to $10 billion per year. At the end of fiscal year 1985, the Federal government owned an estimated 550 million barrels in reserves at Naval Petroleum Reserves No. 1 and No. 3. Based on recent oil field sales, reserves may be worth nearly $6 per barrel. After taking into account continuing production before the sale, the Department estimates that the Federal government's share might be worth $3 to $5 billion.

Legal Requirements for the SPR Fill

Question: What are the legal requirements for filling the SPR while the NPR is operating?

Answer: Under current law, sale of crude oil from Naval Petroleum Reserve No. 1 (Elk Hills) is precluded in any fiscal year unless one of three conditions is met as regards Strategic Petroleum Reserve fill: (1) the Reserve is being filled at a rate of 100,000 barrels per day, (2) the Reserve inventory has reached 500 million barrels, or (3) the Reserve inventory will reach 500 million barrels in that fiscal year.

Question: What legal requirements would be imposed if the Reconciliation bill (H.R. 3128) were to be enacted as it now stands in conference?

Answer: In the conference version of H.R. 3128 as reported on December 19, 1985 (House Report 99-453), no crude oil could be sold from the government share of Naval Petroleum Reserve No. 1 production unless either the Strategic Petroleum Reserve was being filled at an average rate of 35,000 barrels per day or the Strategic Petroleum Reserve inventory had reached 527 million barrels.

Strategic Petroleum Reserve

Question: Congress has already overturned a deferral of FY 1985 funds for continued construction of Strategic Petroleum Reserve capacity. The President signed that bill, the FY 1985 Supplemental Appropriation Act. In FY 1986, Congress provided additional funds to continue construction. In FY 1987 the Administration again proposes a moratorium on facilities construction and proposes to defer funds from both FY 1985 and FY 1986 appropriations. On what basis does the Administration redefer the FY 1985 funds?

Answer: The Administration's proposals for Strategic Petroleum Reserve storage capacity development reflect the studied view that the Strategic Petroleum Reserve currently affords the level of protection originally contemplated by the Congress, when viewed in the reality of the existing crude oil marketplace. Given all competing priorities and expenditures having significance to the country's national security posture, the Administration thus concluded that further expansion of SPR capacity need not occur in FY 1987. The Administration has also concluded that this situation will continue to be carefully monitored with a view to resuming such construction should circumstances so require.

In view of these considerations, we believe the President's deferral proposal fully warrants consideration by the Congress on its policy merits in the legislative process, a practice consistently observed by the Congress in addressing previous such proposals made by the President.

Question: What portion of the funds do you estimate will be used to put the Strategic Petroleum Reserve in a standby condition?

Answer: Actions to place the Strategic Petroleum Reserve in a standby readiness condition consist primarily of the termination of leaching at Bryan Mound and West Hackberry and the cancellation of construction contract procurements for the Big Hill and Bayou Choctaw sites. No significant incremental costs are expected for the transition to a standby condition, though annual resource requirements for continuing in a standby status are estimated at $150 million. For FY 1987, these funds will be derived from the funds proposed for deferral in FY 1986.

State Conservation Programs

Question: The FY 1987 budget proposes to cease funding low income weatherization, schools and hospitals grants, state conservation grants, and the Energy Extension Service by direct appropriation. This is based partly on a distribution of oil overcharge funds directly to the States from the Exxon case.

In addition to the Exxon funds, it is assumed that other funds will be provided from oil overcharge settlements. How, how much, and when?

Answer: The States have some expectations of receiving overcharge funds from several sources other than the overcharge refunds resulting from United States v. Exxon. First, in the case of United States v. Sutton, the decision of the United States District Court for the Northern District of Oklahoma provides for payment of approximately $240,000,000 in overcharges resulting from that case to the States. The District Court decision is on appeal. (There is some question of the government's ultimate recovery in the case due to a pending bankruptcy proceeding involving the defendant.)

Second, pursuant to a potential settlement of the litigation involving the stripper well exemption consolidated in the United States District Court in Kansas (MDL 378), recent proposals would result in a payment of approximately $695 million to the states within FY 1986 and continued payments after FY 1987 as crude oil overcharge enforcement cases are resolved in favor of the government. Assuming an ultimate recovery of $4 billion in crude oil overcharges, the States would receive an additional $1.3 billion subsequent to FY 1986.

It should be pointed out that, with the exception of the Exxon decision, the uses of the monies received by the States are not necessarily restricted to federal energy conservation programs administered by DOE, although all uses must be restitutionary in nature.

Oil Overcharge Money to the Teasury

Question: The budget assumes $750 million will be placed in the general fund of the Treasury in FY 1986 and $1.5 billion in FY 1987 from oil overcharge funds. What is the source of these funds?

Answer: The source of these funds is the crude oil overcharge funds presently held in escrow by the Department of Energy and the anticipated collections of crude oil overcharges by DOE in FY 1986 and FY 1987.

Question: The budget also shows a legislative initiative providing another $1 billion to the Treasury in FY 1987. What is this proposed initiative?

Answer: At the time the President's FY 1987 Budget was printed the working assumption was that legislation would be proposed to direct half of the Exxon settlement funds ($1 billion) to the Federal Treasury. Subsequent to the printing of the budget a U.S. District Court ruling was sustained by the Supreme Court and the District Court directed DOE to begin the process of disbursing all of the funds to the States. However, a satisfactory resolution of the stripper well cases may be a determining factor in assessing the need for future legislation.

Federal Inspector for the Alaska Gas Pipeline

Question: Last year Congress placed administrative support for the Federal Inspector for the Alaska Gas Pipeline under the Department of Energy. Has that consolidation been completed?

Answer: Yes. The initial transfer of administrative support was accomplished October 1, 1985, with the payrolling function being transferred December 8, 1985, to complete the process. The transition was smooth and operation to date has been without any major problems.

Question: There was some consideration being given to assigning the Federal Inspector's duties to a DOE official, by having that official confirmed by the Senate in a dual role.

What is the status of that plan?

Answer: That is still the plan. No decision has been made regarding the designation of a DOE official for this role.

Deferrals of FY 1986 Funds

Question: Argonne National Laboratory was part of a research and development initiative originally suggested by the Administration's own Office of Science and Technology Policy. Congress provided funds ($7.5 million) including mandatory cost-sharing, for this project. You are deferring these funds. Is that because the steel industry is booming? Is it because this is not reasonable research and development?

Answer: The $7.5 million (less Gramm-Rudman-Hollings reductions) which Congress provided for a steel industry initiative is being deferred because the initiative is not a high priority part of the Department's research program and because such activities are not affordable in a period of fiscal constraint. Although some of the ideas proposed do represent reasonable research and development that could eventually benefit the steel industry, it does not appear prudent to initiate a very expensive (estimated up to $.5 billion) program directed at a single industry, with a resulting imbalance in activities directed at the highest priority needs throughout U.S. industry. We are working with the steel industry to determine their research priorities and cost-sharing possibilities. It is possible that they might come forward with a cooperative R&D venture proposal which would be evaluated in light of national industry needs.

Question: A MOD II Stirling automotive engine has just been assembled and has had only a week or two of tests. You propose deferring Stirling engine funds before any comprehensive tests can be made. Is a week of tests sufficient to confirm the MOD II technology?

Answer: Not all of the appropriated FY 1986 funds for Stirling engine development have been proposed for deferral. The proposed deferred funds total $5.3 million, leaving $8.9 million to be applied to completion of the planned initial MOD II tests and an orderly program close-out. This funding level will allow continuation of engine testing so that enough characterization data is obtained to confirm the MOD II design technology.

Question: Is it prudent to culminate an investment of over $130 million by not even testing the end product?

Answer: Early completion of the Stirling engine program in FY 1986 would not waste invested funds since sufficient testing of the MOD II prototype engine will have been conducted to supply industry with the necessary data for evaluation of the end product. MOD II does not represent a single "end product" for a $130 million program--all previous phases of the work have been extensively tested and the contractor has gained substantial engineering knowledge. In addition, the MOD II designs and all of the MOD I equipment and data will be available for industry's use in deciding whether further commercialization efforts should be carried out.

Wilsonville Coal Liquefaction Pilot Plant

Question: You propose to defer $1.33 million out of $6.467 million for the Wilsonville coal liquefaction pilot plant. The industrial partners have already testified that this is the last required year for the program.

Wouldn't it be more efficient to conclude the current testing and have an orderly shutdown? Your estimates are that cancellation costs will exceed the amount you are deferring. How is that cost-effective use of government funds?

Answer: The Department proposes to operate the Wilsonville liquefaction research facility until March 20, 1986, and then terminate operations in an orderly fashion. By that time the research on two stage liquefaction will have used both eastern and western coal and will have tested several process configurations including at least one test on a close-coupled staged configuration. The Department believes this work will make it possible for the private sector to evaluate this approach to coal liquefaction and to decide their own future work in this field. Even though we estimate termination costs of $1,500,000, the deferral will still effect a savings of $1,330,000 and effectively contribute to fiscal constraint and budget reduction.

Fuel Cells

Question: Once again you have deferred all the funds for fuel cells which Congress has added. Is the Electric Power Research Institute increasing funding in this area?

Answer: The EPRI fuel cell budget planned for FY 1986 has been reported by EPRI to be $8.0 million compared to $9.8 million in FY 1985 and $6.6 million in FY 1984.

Question: Is the private sector?

Answer: The total private sector funding is not known since companies need not report their internal funding and programs. The reported planned funding for FY 1986 includes EPRI, $8.0 million; GRI, $5.5 million; IFC (on project co-funded with DOE), $1.7 million; Westinghouse (on projects co-funded with DOE), $3.7 million (phosphoric acid fuel cells) and $1.0 million (solid oxide fuel cells); for a reported sum of $19.9 million. These same values for FY 1985 are EPRI, $9.8 million; GRI, $4.3 million; IFC/UTC, $4.5 million; Westinghouse, $4.3 million (phosphoric acid fuel cells) and $0.7 million (solid oxide fuel cells) for a reported sum of $23.6 million. In addition, the IFC is investing substantially in a final design and manufacturing technology for commercial 11 MW phosphoric acid fuel cells, but the amounts are proprietary and not available to the Department. IFC hopes to start production in the 1987 time frame.

Question: How many commercial orders are there for fuel cells?

Answer: The Department does not know if there are any commercial fuel cell orders. However, the Department is aware of the fact that

International Fuel Cells (IFC) has made a proposal to a number of utilities for the purchase of the first twenty-three 11 MW phosphoric acid fuel cell powerplants. Negotiations are currently still in progress.

Question: Why doesn't it make sense to complete the cost-shared on-site technology program that has been done in conjunction with the Gas Research Institute? Isn't this the last year of that contract?

Answer: The contract completion date is February 1987. The performance goals for all subsystems of the 200 kW power plant have been achieved. The integration of the subsystems remains to be done. The completion of this integration using the developed technology and drawing on the experience gained in the successful 40 kW field test is within the capability of the private sector.

Question: Have you completed the scope of work originally anticipated for the Westinghouse program?

Answer: The Westinghouse electric utility PAFC program is projected to have completed verification testing of a 25 kW stack at the end of FY 1986. This 25 kW stack is currently expected to be the basic building block of the prototype 100 kW stack to be used in the prototype fuel cell module for the 7.5 MW power plant. This does not fully complete the original scope of work but is considered to demonstrate technical feasibility of the stack concept involved. The overall Westinghouse program has been rescheduled considerably due to slower technical progress than anticipated and changes in the scope of the program.

Overall R&D Priorities

Question: Major oil companies are retrenching in addition to providing most of their remaining R&D funds to offshore activities. Small producers never have done enhanced oil recovery R&D. Who is going to develop enhanced recovery methods needed to keep up domestic production?

Answer: We are aware of the potential long-term importance of EOR to the domestic oil industry and we believe that the EOR budget proposal is appropriate given the budget deficits. The $4.5 million we have requested in the FY 1987 budget request will continue to support a balanced, effective Enhanced Oil Recovery program.

We also expect that some of the universities now working in the EOR program will continue to do so under the Cooperative Venture Pool. Many of these universities have been engaged in joint projects with private industry. These universities could participate with private corporations, and even state and local governments, in an independent venture that could qualify under the Cooperative R&D Ventures Pool concept. Thus, we believe that the critical aspects of the EOR program will be preserved.

Question: Your own budget highlights state that coal will become the Nation's primary energy source. In view of the difficulty in burning it cleanly and mining and burning it efficiently, why are you decreasing R&D to only $82 million in 1987?

Answer: We believe that the $82.2 million requested for the coal portion of the Fossil Energy request for FY 1987 represents the proper balance between maintaining a strong technology base R&D program while recognizing the serious national budget deficit problem. It should be noted that in addition to the $82.2 million requested for the technology base R&D program, approximately $149.1 million is available in FY 1987 to conduct cost-shared construction and operation of clean coal technology projects to demonstrate the feasibility of future commercial applications of these technologies. We believe that when all of the coal-related, Federally- sponsored program are considered, a viable, effective coal program has been requested for FY 1987.

Conservation R&D Budget Cutbacks

Question: In Conservation R&D, most of the programs which have been funded have been based on increasing efficiency and developing frontier technologies, such as ceramics. Most also have been cost-shared with industry. You are reducing these programs to $71 million in 1987. What funding source is going to step in and maintain the activity in this area?

Answer: The funding reductions reflect both programmatic decisions that some activities are not really appropriate for federal funding, and the need to reduce the Federal budget deficit. In applied research and development areas, with nearer term benefits, industry may well step in to continue research and development efforts. They may be able to increase their contributions and leveraging of federal funds by proposing cooperative research and development ventures in some areas. Conservation has been proving itself to be good economic sense, so we expect some increases in the level of private investment. Many efforts can be further stretched out without harm to our continung conservation efforts.

Question: How is reduced funding going to assist our industries, such as steel, compete with overwhelming foreign competition?

Answer: The best way to assist our industries is by providing a healthy economic climate for their own investment, rather than trying to invest for them. This should be augmented by federal support for development of the most promising longer-range bench scale or proof-of-concept technologies at national laboratories or universities. The economic climate is fostered by lower world energy prices that result from free market competition, and by lower interest rates that result from a reduced federal deficit. The genuine need for supporting research to provide new technology options to industry can be adequately funded within the requested budget.

Effect of Research on Trade Competition

Question: An Article by Haynes Johnson in the February 5, 1986, Washington Post states that "...less than 1 percent of Federal research money is directed toward commercial industry. Our Japanese and German competitors allocate more than 12 times that amount."

These countries also operate on a free enterprise basis. How are we going to compete with them in our industrial sector if we continue to reduce government support, and channel the remaining support we give mainly to the defense sector?

Answer: Your question raises a number of broad issues regarding Federal support of research and development and its role in promoting economic growth and international competition. A complete answer to the question involves a number of issues that go far beyond the mission and the expertise of the Department of Energy. However, there are several observations that we can offer.

- In terms of total research and development expenditures (government and industry; civilian and military), the U.S. investment in R&D is slightly greater than our allies, as measured by R&D as a percentage of GNP. The estimates below, for 1984, have been compiled by the National Science Foundation.

United States . . .	2.7%
Japan	2.6%
Germany	2.5%

- Although the U.S. allocates a greater proportion of its research dollars to defense purposes, it should be recognized that much of this research has civilian spin-offs. Also, it must be recognized that in the case of Japan and western Europe, the U.S. provides a certain level of defense capability for these countries, which allows them to invest less in military R&D.

- It must be recognized that R&D expenditures are only one factor that has bearing on international competition.

However, the effect of this factor is small compared to other economic variables.

In a preliminary analysis, Wharton Econometric Forecasting Associates has constructed an index to measure how ready or prepared the United States is to compete with foreign nations. Trading- partner countries included in this study were Japan, Canada, West Germany, the United Kingdom, France, and Italy. This "Trade Performance Index" is a good predictor of U.S. trade performance (with an average lag of one-and-one-half years).

Factors included in the analysis were:

- relative unit labor cost;
- the presence of fixed exchange rate regimes;
- the ratio of foreign R&D expenditures as a percentage of GNP to domestic;
- relative real interest rate; and
- the U.S. personal savings rate.

According to the Wharton analysis, "(t)he single biggest factor that seems to explain movement in the Readiness Index is the relative-unit-labor-cost term." As the foreign percentage of GNP used for research and development increases relative to the domestic share, our "Readiness Index" decreases, but this is the smallest effect of any variable considered.

Employment Floors

Question: Mr. Secretary, last year you sent the Subcommittee a letter on July 9, in response to our concern that you were not meeting the requirements of the law with regard to employment floors in the Conservation area.

We were concerned because 318 employees were on board and the floor was 352. That was also 16 less than the beginning of 1985.

You responded you were determined to meet the floor as soon as practical. As of December 31, 1985, you have 320 employees, an increase of 2 employees. Why is it so hard for you to hire employees in Conservation when you meet the law's requirement in all other areas? What are you doing to fill these vacancies?

Answer: CE has not met the Congressionally mandated "floors" in the Conservation R&D programs but has been consistently at or near the "floor" for the State and Local Assistance Programs (SLAP). The reasons for the difference between these programs meeting the floors is due to the skills required. The R&D programs require engineers and physical scientists with specialized training in different fields, e.g. metallurgy, fuels technology, materials, etc.; while the SLAP programs require general program managers, procurement specialists and other more plentiful non-technically trained staff. We have advertised in technical journals, newspapers, through word of mouth, and we sent staffing specialists to universities. Our success has been very limited and it is becoming even more difficult to recruit for federal service due to the Federal fiscal constraints such as Gramm-Rudman-Hollings and the possible effects on Federal employees. Generally, people with the skills we are seeking are in demand in the private sector and can earn more there.

Question: As a practical matter, what is the effect on Conservation personnel if grant programs cease in FY 1987?

Answer: If the State and Local Assistance grant programs cease in FY 1987, the requirement for personnel will be less. However, closeout of issued grants and technical assistance provided to the States will still require some staff, with exact numbers, location and timing to be determined by workload analyses.

QUESTIONS SUBMITTED BY CONGRESSMAN RALPH REGULA

Clean Coal Technology Program

Question: Do you believe that the federal government has a first right of repayment compared to other private investors in a project? If so, why? If not, why was the PON not changed after the Clean Coal Technology Coalition, Edison Electric Institute and others advised that such a requirement presents a major problem?

Answer: It is not clear what is meant by the term "first right of repayment." However, the final PON originally provided that revenues would be shared during the operating phase of the cost-shared project, and net revenues would be shared following the period of performance of the cost-shared agreement. in proportion to the overall cost share for the project.

Subsequently, we issued an amendment to the PON which deals with repayment of the Government's cost-share. The amendment permits participants to retain all revenues generated during the operating phase of the cost-shared agreement.

Question: Has the Department sought advice from FERC or other government or private experts on how to structure a government/private financial partnership when one is a regulated entity such as a utility? Can you give me your assurance that you will do this and that you will discuss it with me further? Will you do this well in advance of the Pre-Proposal Conference on March 6, 1986?

Answer: In the past, the Department has entered into cooperative agreements and contracts for demonstrations with regulated utilities. Therefore, the Department was able to relay on in-house expertise to develop the PON issued on February 17. For this reason, we do not believe it is necessary to seek the advice of FERC or other Government agencies regarding the PON.

Deferrals

Question: Why was KILnGAS spared? As I recall you proposed deferring this project last year and now it has the unique distinction of being one of only two Congressional add-ons spared.

Answer: The KILnGAS project represents a unique combination of technical progress, state and local interest, exceptionally high levels of industrial/third party cofunding, and a maximum return to the Government for a comparatively small amount of support. Specifically, it was decided to concur with Congress in providing the funds needed to bring this project to a successful conclusion for the following reasons:

- The project has received strong financial backing from the industrial sponsors and the State of Illinois. It, therefore, exemplifies a Federal- State-Industry partnership in which financial resources are pooled, thereby not placing an unreasonable financial burden on any one participant.
- The Federal Government is a minority funding participant. Over $200 million has been invested in this plant to date. The Energy Department's contribution will total $7.4 million in FY 1985 funds and $14.3 million in FY 1986. The State of Illinois has contributed $28 million while the private sector has provided more than $165 million. DOE's FY 1986 funding will be combined with an additional $20 million from non-federal sources.
- Under terms of the cooperative agreement with the Allis-Chalmers Corporation, the project's industrial sponsor, the project could repay to the U.S. Treasury up to double the total federal expenditure upon successful commercialization. It is also clear that the private participants have an interest in bringing the project to a close, rather than prolonging it indefinitely.

Cooperative Ventures

Question: Your budget proposes $12.5 million for a pilot cooperative research and development venture pools with industry in the fossil program. Your budget envisions a limited role for the government with its primary role being technology transfer. What do you see as the incentive for industry to put their money into research over which they will lose all proprietary rights for a clearly minimal cash contribution from the government?

Answer: The U.S. Department of Energy would be, as you have recognized, a minority partner in any venture with industry, i.e., Federal funds would comprise less than half of the total venture investment. That is not necessarily a "minimal" contribution. Also, the venture itself would retain proprietary rights on behalf of the participants. Resulting returns from the products of the venture through royalties or other profits would be shared proportionate to each parties' contribution to the venture. Proprietary rights and the resulting returns to venture participants would thus not be lost to industry participants, but would be shared in proportion to their contributions, or according to some other equitable arrangement agreed upon when the venture was formed.

Question: As I read the proposal for the cooperative venture program it is intended to replace efforts that have traditionally been funded within the fossil R&D budget with the idea that the private sector will direct R&D. Should the government leave all the decisions on how to spend R&D dollars to the hands of the marketplace. Aren't there other areas of research that should be conducted that may not yet be attractive in a competitive marketplace?

Answer: The private sector will not direct R&D. The proposed joint venture program will be initiated in FY 1987 as a "pilot effort" on extraction technologies which, if it is found to be an attractive approach, may eventually result in the transformation of much of Fossil Energy's industry-performed research into this mode. This approach was not intended to apply to the research DOE funds at the National Labs, in-house at the Energy Technology Centers, or universities. The funding pool will be used to participate in industry-formed R&D cooperative ventures consistent with the Cooperative R&D Act of 1984. Proposed ventures will be evaluated and judged by the government in terms of their responsiveness to national goals and objectives as well as the quality and value of the proposed venture. The approach will allow industry to join with the government in applied research and development activities that may serve to achieve our energy goals and to reduce those traditional barriers that limit the financial and technical cooperation between the private and the public sectors (e.g., patent positions, proprietary rights, anti-trust concerns, etc.). Ideally, the private sector will offer partnership opportunities to DOE, and the Department will be in a position to choose where to invest its venture pool resources.

The joint venture concept is intended to give the private sector greater flexibility, commensurate with their increased financial responsibility, in proposing specific technologies or U.S. resource development strategies and establishing project priorities. This approach is also intended to improve the transfer of any taxpayer-supported research and technology to a strong, internationally competitive U.S. industry and ultimately to transfer it to commercial practice.

In terms of research that may not yet be attractive in a competitive marketplace, the proposed Fossil Energy programs for FY 1987 encompass a balanced portfolio of activities that include both cooperative ventures as well as tech base activities such as the Advanced Research and Technology Development program and the Advanced Process Technology program that are focused on more fundamental generic research. In addition, the U.S. government continues to support basic science and research activities of prospective benefit to the Nation, including its industry through National Science Foundation programs and DOE's Office of Energy Research as well as fundamental research supported by DOE's Office of Fossil Energy, principally at Energy Technology Centers, National Laboratories and universities.

Energy Research Advisory Board

Question: What is the purpose of the Energy Research Advisory Board?

Answer: The purpose of the Board is to provide me and other Secretarial Officers with advice and expert guidance on the research and development activities of the Department. It provides a unique source of outside expertise that could not be obtained from other sources.

Question: Who serves on this organization and how is its composition determined?

Answer: Members are selected for technical competence, but careful attention is given to a balance of such factors as gender, race and geographical distribution. Also considered are environmental and consumer viewpoints, the spectrum of energy technologies, background in management of various R&D technologies, and representation of industry, universities, state and local agencies and others. The members are private citizens selected by me, whose only compensation for service on the board is travel expenses.

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University Of Pennsylvania

STAFF
Thomas P. Sheahen
Executive Director, ER-6
Energy Research Advisory Board
1000 Independence Avenue, SW
Washington, DC 20585
(202) 252-2329

Question: From what I read in Inside Energy their advice is not regarded too highly. Would you care to comment on the Department's apparent lack of regard for the advice of this group?

Answer: The Department does value the advice of the Board, and it is taken seriously. In some cases, however, major changes in our budget make it impossible to implement their recommendations. For example, available funds simply do not allow us to carry out all of the research and development proposed in the Board's report on "Light Water Reactor Research and Development".

Oil Import Fee

Question: What are your views on imposition of an oil import fee?

Answer: It is the Administration position that an oil import fee is not needed on grounds of energy policy. A fee would make it more difficult for domestic industries to compete with imported manufactured goods, and for U.S. exports to compete in foreign markets. There is little national security risk from current import levels. If future import levels rise, the best energy security will be provided by adequate strategic oil stockpiles in the U.S. and other consuming countries, rather than an oil import fee.

QUESTIONS SUBMITTED BY CONGRESSWOMAN LINDY BOGGS

Strategic Petroleum Reserve Deferral

Question: I understand that the Department is proposing a deferral of funds for the Strategic Petroleum Reserve because the Administration believes that there is sufficient crude oil presently in the SPR to handle any foreseen emergency. Is this correct? Is this then really a "termination" of Big Hill rather than a deferral?

Answer: The Administration believes that under current world oil market conditions, the present Strategic Petroleum Reserve oil inventory is sufficient. However, the option to resume Strategic Petroleum Reserve development is being left open for periodic reassessment in light of future oil market trends and Federal budgetary considerations. A permanent termination of Big Hill development is not being proposed at this time.

Big Hill Construction

Question: Considering the time and money invested in the Big Hill Site (now approximately 50 percent complete) does it seem prudent to stop construction at this point when it could be finished with relatively little additional time and money?

Answer: The incremental cost to complete construction and leaching at the Big Hill site, which is now approximately one-third complete, in addition to funds planned to maintain the site in a standby condition, is estimated at approximately $247 million through FY 1991. In light of the proposal for a moratorium on Strategic Petroleum Reserve fill at the end of FY 1986, the Administration believes it is prudent to avoid further investment in storage capacity development at this time.

Question: Even if the SPR is to be limited to a capacity of approximately 500 million barrels instead of the 750 million barrels which has been repeatedly authorized and funded by Congress, then isn't it still prudent to complete Big Hill and ~~use it~~ to replace some of the less reliable and more costly to maintain currently-filled sites?

Answer: All existing SPR sites are maintained in a high state of reliability, the same condition that a completed Big Hill would be maintained in. From a cost perspective, the Big Hill project is only one-third complete. Transferring crude oil from currently developed and filled sites to Big Hill, when complete, would add oil movement costs as well as substantially increased annual standby costs to maintain the Big Hill site in a full drawdown readiness mode. Therefore, the Big Hill storage site is not considered a prudent alternative to existing sites for a 500 million-barrel program.

Big Hill Facility Preservation Measures

Question: If Big Hill construction is to be deferred, then shouldn't every possible, reasonable measure be taken to insure that our investment of both time and money be protected to the maximum extent possible?

Answer: We intend to maintain the Big Hill site in a state of readiness to resume construction, if warranted. Delivered and/or installed equipment and facilities will be preserved and maintained through a preventive maintenance program specifically designed for a standby status. In this regard, our budget provides significant resources for standby activities, including the necessary preventive maintenance to assure that there is no degradation in equipment or facilities.

Architect-Engineer Contract Tasks

Question: With regard to my previous question, I understand from the General Accounting Office that the SPR contracting officer has directed a deletion of over 70 percent of the items recommended by the project architect-engineers as requirements for an "orderly" shut-down. Is this action final, or will this matter be reconsidered to insure prudent action in protecting our investment even if it costs a little more now?

Answer: The deleted items refer to Architect-Engineer (A-E) Tasks within the A-E services contract of Walk, Haydel and Associates. The tasks that were deleted from the Walk, Haydel and Associates scope of work are not required to place the site into a standby condition. These tasks can and will be accomplished when construction activities are resumed at a later date.

Big Hill Team

Question: Further, with regard to my previous question, I also understand that a good experienced engineering and management team, both government and contractor, is presently in place on the Big Hill project. Is necessary action being taken to preserve at least a good portion of this team in order to insure an orderly and economical completion of Big Hill at a later date, and thus also insuring highest quality in the completed facilities. I understand that the action being proposed would dismantle these teams completely, is that correct?

Answer: The Department does not foresee a significant problem in resuming Big Hill development at a later date due to the loss of government and contractor expertise. We would anticipate that because of the measures being taken to document carefully both the status of Big Hill development prior to the moratorium and the government's design plans for remaining work and because of the availability of engineering and construction expertise in the Texas and Louisiana area, we would be able to ensure an orderly restart of construction in the future. While Federal staffing allocations for the Strategic Petroleum Reserve are expected to be reduced by approximately 20 percent from FY 1986 to FY 1987, the Department has not developed specific plans for accommodating these reductions and would anticipate that most would occur through normal attrition. Thus, it is not possible to identify with certainty which staff might choose to leave the Strategic Petroleum Reserve. However, the Reserve organization constitutes less than one percent of the total Department, and we anticipate the ability to fill key vacancies from within the Department if staffing were later expanded to resume development.

Additional Costs for Big Hill

Question: What will be the additional costs involved in the proposal to defer and complete Big Hill later as compared to completing it without interruption now?

Answer: The incremental costs of completing Big Hill in addition to standby moratorium costs may increase over time based on inflation, but we do not foresee any other major sources of cost increases. If the fill of Big Hill is not expected until the mid-1990's or later, deferring construction may actually save money due to the avoidance of additional interest on the Federal debt and due to the avoidance of costs for maintaining additional equipment which would be installed if development were to proceed at this time.

Big Hill Construction

Question: How can you reconcile the method currently being used and proposed to implement the Big Hill deferral with the good management principles that have characterized the SPR Project Management since its take over by Oak Ridge Operations? This not only seems inconsistent but imprudent and wasteful, does it not?

Answer: The management principles currently being applied by SPR project management will essentially continue through the period during which Big Hill is brought to an orderly state of standby. Activities such as Title III inspection services, quality assurance, and cost and schedule control will continue, but will be reduced or streamlined consistent with reduced site activities to insure the most efficient expenditure of funds during the transition of Big Hill to a standby mode.

QUESTIONS SUBMITTED BY CONGRESSMAN SILVIO O. CONTE

Oil Import Fee

Question: Mr. Secretary, I noticed in your prepared testimony that you sited declining oil prices since 1981 as a positive aspect of our current energy situation. I agree, but there are a few misguided people around town who want to trash the benefits of lower oil price by imposing an oil import fee. Not only would this tax slow economic expansion, but an oil import fee is unfair to the Northeast and to consumers around the country. And there are serious doubts as to whether an import fee on oil can really raise the revenue claimed by the proponents.

Do your agree with this asessment?

Answer: Yes, an oil import fee would slow economic expansion and raise energy costs to consumers. As you note, the fee may not raise as much money as expected, particularly if some products are granted exemption from the fee.

Question: How would an oil import fee affect the energy situation and the economy in general?

Answer: An oil fee on U.S. oil imports would raise the cost of energy throughout the entire economy. An import fee would raise the cost of domestic oil, domestic natural gas and imported natural gas as well as imported oil. Energy cost increases would reduce U.S. economic expansion. An import fee would not significantly improve U.S. energy security, since a supply disruption that raised world prices would raise the cost of energy to U.S. consumers regardless of the level of U.S. dependence on oil imports. Certain sectors of the economy (e.g., agriculture, chemicals, petrochemicals and the automobile industry) would suffer unemployment and idle resources due to any large oil price increases. In addition, the effect of a disruption on our import dependent trading partners would be transmitted back to our economy in the form of reduced demand for some U.S. exports and higher prices for goods imported by the U.S. On the production side, the increase in U.S. energy production following imposition of an import fee is not expected to be large.

Question: Has the Department studied the regional impact of an oil import fee?

Answer: Yes, the Department has examined regional impacts. After allowing for equalization of the price of imported oil subject to the fee and domestic production not subject to the fee, we find that states most affected are those where reliance on oil heat is highest and also those where driving distances are greatest. An import fee would bear heavily on consumers in New England, the Great Lakes States and the Mountain States.

Synfuels Corporation

Question: Many times over the last budget cycle, you were the lone Administration voice supporting the dismantling of the Synthetic Fuels Corporation, specifically my rescission amendment. I want to commend you for taking a stand and for actively working to stop this waste and abuse of Federal funds.

Earlier this week, we had what was left of the Synfuels staff before this Committee for a hearing, and the status of the Union Oil Project Award was discussed. I'm sure that you were as outraged as I was when the board met in January to "Make Final" the Union deal.

I'm still working on other legal remedies, but has there been any discussions within the Administration regarding the status of the Union Oil award?

Do you think this award by the Board in January should be accepted or challenged by the Administration -- specifically the Treasury Department?

Answer: I share your concerns about the hurried attempt by the Synthetic Fuels Corporation (SFC) to finalize the Union Project.

The Department has done no definitive legal review of the Union arrangements with the SFC with respect to whether or not those arrangements legally obligate the Government to spend funds.

As a result of House Joint Resolution 465, Further Continuing Appropriations for Fiscal Year 1986 (Pub. L. 99-190, December 19, 1985), all functions and authority of the SFC were transferred to the Secretary of the Treasury. Legal opinions and procedures relating to the Union award could best be answered by the Secretary of the Treasury.

Great Plains Project

Question: What's the current status of the Great Plains Project?

Answer:

Plant Operations

The Department continues to operate the plant, addressing the efficiency of operations and the capital projects deemed necessary for environmental or economic reasons. SNG production for the past six months are tabulated below.

SNG Delivered	Average MMSCF/DAY	Percent Capacity
August 1985	118.6	86.3
September	125.3	91.1
October	140.9	102.5
November	135.4	98.5
December	119.1	86.6
January 1986	136.3	99.1
Average Aug. 85-Jan. 86	129.3	94.0

The CY 1986 operating budget for the plant has been reviewed and approved by the Department. A capital budget of $7.1 million for CY 1986 has also been approved. Of the $7.1 million, $2.0 million is for the completion of the four remaining odor projects necessary to bring the plant into compliance with North Dakota odor standards, $3.0 million is for projects directed at reducing sulfur emissions, and the remaining $2.1 million is for the accomplishment of projects necessary to maintain or improve upon current production levels.

Litigation

On January 14, 1986, the North Dakota Court found:

- That state law is not applicable and that plaintiffs (DOE/DOJ) are entitled to a summary judgment for foreclosure.
- The defendant pipeline companies are liable to the plaintiffs (DOE/DOJ) for the difference between the contract price and the market value price and granted the motion for summary judgment determining the validity of the gas purchase contract.

DOE/DOJ are currently preparing documents for submittal to the court necessary to effect the foreclosure. The DOJ is currently negotiating with Tenneco and National Gas Pipeline Company in an effort to reach a settlement on the amounts owed. ANR has paid all monies owed for principal and/or interest for SNG delivered from July 1, through December 31, 1985. Transco is claiming a disputed credit for $395,000 but has paid the rest of what it owes for that period. All four pipeline companies have paid for SNG delivered in January 1986 at the Gas Purchase Agreement rate.

Three of the four pipeline companies (all except ANR) have indicated they will appeal the ruling of the court of January 14, 1986.

Financial

Prior to the court decision of January 14, 1986, which ruled the Gas Purchase Agreements valid and enforceable, our estimates were that additional federal financing of the project would have been required in March 1986 for continued operation. With the payment of ANR Pipeline Company of February 5, 1986, and the payment for January 1986 gas deliveries at the Gas Purchase Agreement rates by all four pipeline companies, sufficient working capital has been infused into the project to preclude the necessity for additional federal financing at this time.

Question: Is a sale planned for the near future?

Answer: DOE published a notice in the Federal Register on February 13, 1986, soliciting "Statements of Interest" and "Informational Proposals" from public and private sector organizations for acquiring the Great Plains Coal Gasification Plant. Responses are required by April 4, 1986. DOE expects to analyze the Statements of Interest which are submitted in response to this notice with the intent of using these in the DOE's deliberations to determine the most appropriate means to secure a viable owner of the Great Plains Gasification Project in order to recover as much as possible of the principal and interest which has been paid pursuant to DOE's guarantee and to continue, for a sustained period of time, the operation of the gasification plant to produce substitute natural gas (SNG) and other product slates for sale in the marketplace.

Question: What happens if there are no buyers?

Answer: While considering other options for the disposition of the plant, the Department would continue to make a good faith effort to keep the project in operation after the current litigation is resolved provided that revenues received from the operation of the Project suffice to pay all operating and capital expenses for the Project, so that additional taxpayer's funds need not be spent to operate and maintain the project.

Question: Do you expect to spend any Federal funds on the facility -- for operation, maintenance or capital improvements?

Answer: No. Revenues from continued operation of the plant suffice to pay all operating and capital expenses.

Question: Have any federal funds been spent to date?

Answer: Since August 1, 1985, no federal funds have been spent to continue operation of the plant, or to accomplish capital improvements.

Clean Coal Program - Acid Rain

Question: Last year, we both tried to cut back funding for the Clean Coal Demonstration Program. In a letter to members of Congress, you highlighted the drawbacks of a multi-year program. You said "the proposed demonstration program forces the Federal Government to intervene in market place decisions in a programmatically unsound manner", and you predicted that the program "will not accelerate the commercialization of new clean coal technologies". The Department also correctly pointed out that private industry was already doing work in this area, and this program would be an undeserved subsidy.

Without considering the $400 million program now in place, do you still believe these observations are accurate today?

Answer: The Department continues to support its previous statements on the relative roles of the Federal Government versus the private sector in the demonstration of new energy technologies. Against our recommendations, Congress appropriated funds for the Clean Coal Technology demonstration program, but at a funding level considerably lower than originally proposed.

As a result of considerable discussions, prior to the Congressional appropriation, the Administration agreed to implement the program.

Question: In light of our expanded Clean Coal Program recommended by the special envoy's report on acid rain, do you think these criticisms apply?

Answer: We do not, in fact, have an "expanded Clean Coal Program" recommended in the Special Envoys' Report. The recommended program and the Clean Coal Program emphasize different objectives.

Nonetheless, we have not seen anything in the Special Envoys' Report which substantially changes our views on the relative roles of the Federal Government versus the private sector in the demonstration of new energy technologies.

Question: Environmentalists have pointed out to me that "affordable technology to control acid rain has been commercially demonstrated for more than a decade". Do you agree?

Answer: Information provided by the Department of Energy and the Electric Power Research Institute in previous testimony refutes that assertion. We also note that the Special Envoys' Report concluded that "...a significant impediment to the development of a U.S. consensus on acid rain is the high cost of available control options."

Question: Do you think industry has the capital to meet a 50% match for a $5 billion technology research program?

Answer: U.S. industry has a very large capacity to raise capital. Whether this capital should be diverted to a technology research program on acid rain is the central issue. This is particularly true when one recognizes that this use of capital would likely displace some other planned activities which could be more productive for our economy.

Question: Do you think a $5 billion Clean Coal R&D Program, cost shared with industry over five years, can be effectively administered?

Answer: The management and administration of such a program would be a large, costly and complex task. These efforts could divert resources from other, possibly more productive activities and would further increase government interference in the commercialization process.

Question: Are there guaranteed results? Isn't it possible that after spending millions on this demonstration program, acid rain causing pollution may not be reduced at all?

Answer: There are no guaranteed results in any program of this nature.

Question: Do you think it's worth spending $2.5 billion more in federal funds?

Answer: The Administration is currently pursuing a federal program to achieve the purpose of expanding the number of commercially available control options and clean coal technologies. In regard to this program, all aspects of the Special Envoys' Report are under active consideration at this point.

Acid Rain - Clean Coal Program

Question: In rough terms, how much of the $400 million will be spent on projects directly relating to improving acid rain control technologies? (Specifically spent on retrofit technologies designed to achieve reductions in the short term?)

Answer: The Clean Coal Technology Program Opportunity Notice was issued on February 17, 1986, and proposals in response to this notice are not due until April 18, 1986. It is therefore premature to speculate upon what portion of the Clean Coal Technology funding will be allotted to retrofit technologies. However, based upon past experience, some overall generalities can be assumed:

o Most of the clean coal technologies (either alone or as part of a system) expected to be proposed as part of this program appear to have environmental advantages over existing commercial technologies.
o Many of the advanced technologies, when compared to current technology, are expected to have the capability to reduce air emissions in a more cost effective manner.
o These advanced technologies are also expected to be generally more efficient and in many instances to produce waste products that are more environmentally acceptable than those of current technology.

In summary, it is likely that many of the projects proposed under the Clean Coal Technology Program could result in environmental improvements over current technology in the utilization of coal in the U.S.

Clean Coal - Gramm/Rudman

Question: Among its many distinctions, the Clean Coal Program is one of the new -- if not the only -- new programs to be exempt from the Gramm-Rudman FY 1986 cut of 4.3%. I raised this issue in conference, but there was little enthusiasm to clarify the ambiguity. Apart from the technical exemption, don't you think Graum-Rudman should apply to this program?

Answer: The Administration is on record in support of a sound National fiscal policy, including the reduction of the current Federal deficit. The FY 1986 appropriation for the Clean Coal Program was, however, taken from funds previously set aside in the Energy Security Reserve Fund. Therefore, it did not constitute new budget authority, and, as such, it is exempt under the Act. Therefore, no reduction can be made in Clean Coal Technology Program funds consistent with Gramm-Rudman.

Question: Mr. Secretary, I noticed you sent several deferrals up to the Hill for consideration. Why didn't you propose to rescind 4.3% of the Clean Coal Program to make the Gramm-Rudman cut apply in this situation?

It seems that almost every Congressional add-on for FY 1986 was proposed for deferral except for the Clean Coal Program. Why was this program given special treatment?

Answer: As explained in the answer to a previous question, this program did not receive special treatment; as the appropriation did not constitute new budget authority, it was exempt from the operation of Gramm-Rudman.

In addition, the Clean Coal Technology Program, recently enacted as part of the FY 1986 Interior and Related Agencies Appropriation Act, has a combination of benefits that distinguish it from many of the other programs that we have proposed for deferral or rescission. First, the program limits the government's share of the total project cost to 50 percent, thus requiring mandatory cost-sharing by project sponsors. This requirement mandates a more significant role for the industry participant than we have experienced in other programs. In addition, DOE intends to implement repayment provisions in the program which could, in effect, repay the taxpayers investment, if the project is profitable.

MONDAY, MARCH 3, 1986.

ENERGY INFORMATION ADMINISTRATION

WITNESS

HELMUT A. MERKLEIN, ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION

Mr. **YATES**. Mr. Reporter, show the hearing as coming to order. This is the hearing on the budget for fiscal year 1987—this says 1986. I am sure they mean 1987—of the Energy Information Administration.

Appearing in support of that appropriation is Mr. Merklein, its Administrator. Mr. Merklein's statement may be made a part of the record at this point.

All right, Mr. Merklein, you want to tell us about your operation.

FY 1987 BUDGET REQUEST

Dr. **MERKLEIN**. Yes, sir. I would be glad to. I am pleased to appear before you today to present the fiscal year 1987 budget request of the Energy Information Administration.

This request is for $59.7 million and 479 full-time equivalent staff years.

I consider this amount to be adequate to continue EIA's basic mission in 1987. Our budget request, in the amount of $59.7 million, compares to the fiscal year 1986 appropriations as follows: the FY 1986 appropriation enacted was $60.3 million, and the budget authority after adjustment for the Balanced Budget and Emergency Deficit Control Act is $57.7 million.

Starting from the fiscal year 1987 base of $60.1 million, EIA programs increase by a total of $3.1 million. These increases consist essentially of EIA's assumption of the funding for the annual Uranium Industry Viability Assessment, that is a half a million dollars, and an increase in administrative support services provided by the department's management and administration office.

This increase in the amount of $2.6 million reflects, among other items, the initial purchase price of a new telephone system that will lead to reduced operating costs in the future.

Program reductions total $3.6 million, one-third which is a result of reduced computer prices and an early buy-out of EIA's new main computer system, an IBM 3084 QX system.

The remainder is spread fairly uniformly across the various EIA offices.

Mr. Chairman, I am sure we will be discussing budget items of interest to this committee in some detail. There are, however, two items of considerable interest to me I would like to have an opportunity to bring out.

FINANCIAL REPORTING SYSTEM

These two items are the financial reporting system and the state heating oil grant program. We are again proposing to terminate the financial reporting system, the FRS, in fiscal year 1987.

This program is legislatively mandated by the Department of Energy Organization Act. The administration has submitted appropriate legislation in the Congressional Reports Elimination Act of 1985 to repeal the requirement.

The financial reporting system includes the collection and publication of financial and operating data on 22 major energy companies.

This data collection is excessively burdensome and is duplicative of publicly available data. The series was established in 1977 in the face of considerable apprehension, justified at the time, that the embargo-generated increase in crude oil prices would bring windfalls and perhaps permanent windfalls to the oil companies.

As it turned out, and as many economists, including myself, had predicted at the time, this was not the case. The windfalls associated with the 1973–1974 rise in crude oil prices, and a similar windfall in 1980 and 1981, were both dissipated through increased drilling and exploration efforts in the largely competitive environment of the oil and gas producing industries.

Mr. Chairman, I might give you one example. In 1984, the United States alone drilled 84,000 wells. In the free world outside the United States, all wells drilled numbered only 15,000, and that includes about 9,000 in Canada.

So, if you take all the Middle East, all of South America, all of the Far East, all of the rest of the world together, they only drilled 6,000 wells compared to our 84,000 wells in 1984.

And I submit to you that we do have a very intensely competitive producing industry in this country.

Today, the major oil companies collectively have a financial performance in terms of both returns on assets and returns on owner's equity well below that of the Standard and Poor's 500 industrial corporations.

Again, the windfalls have been dissipated. Moreover, the recent and dramatic decline in crude oil prices currently going on is subjecting the industry to a severe depression, the worse it has had in the past decade.

So that all activities not directly related to productive efforts become doubly burdensome and would, and perhaps should, ordinarily be eliminated.

Finally, Mr. Chairman, financial accounting standards have evolved rapidly since 1974, so that data, especially reserves data, that were hard to get a decade ago are today required to be included in quarterly and annual corporate reports.

This, coupled with the fact that most of these data are already collected and published by commercial enterprises—you can buy them in the market for $400 a year—at a time when it is critical to control government spending, make, Mr. Chairman, a convincing case that the time for eliminating the financial reporting system is now.

I strongly urge repeal of this burdensome requirement.

STATE HEATING OIL GRANT PROGRAM

The second item of interest deals with the state heating oil grant program, which is also proposed to be terminated. This program has been funded by EIA since fiscal year 1979 with the exception of fiscal year 1983.

The 14 states which participate in this program collect state level residential price data. Some states also gather wholesale fuel oil prices and inventory figures.

I might add, at the height of the demand for this program, Mr. Chairman, we asked 20 states to participate, and only 14 showed interest.

We had, seven years earlier, asked all of the states, and only about two or three in addition to the 14 had some remote interest.

There isn't that much interest.

In any event, the collection of these data, including the inventory figures, has enabled EIA and state energy agencies to monitor and evaluate heating oil prices, supply and direction trends.

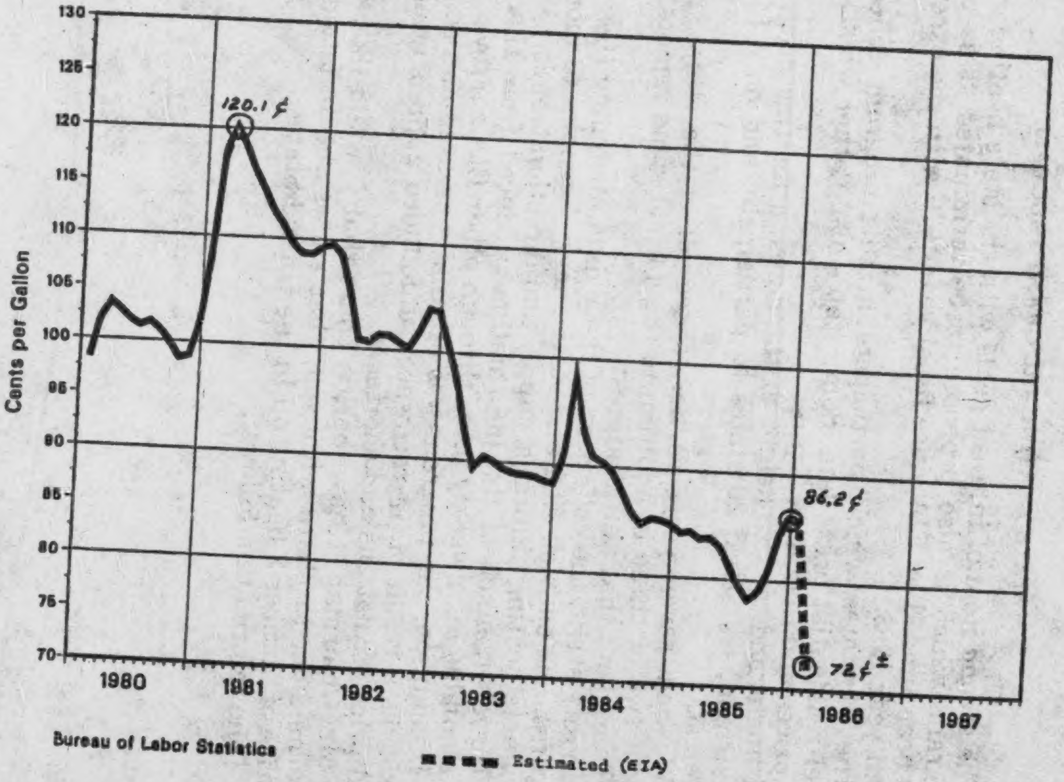
However, much of the information produced from this program is available on a weekly basis through other EIA surveys.

In addition, the program was originally created and continues to exist as a result of, in retrospect, unfounded apprehensions of fuel oil price escalations and shortages.

Mr. Chairman, I have here a chart that I would like, with your permission, to share with you, that shows the inflation adjusted price of number 2 heating oil in the United States.

[The information follows:]

National Average No. 2 Fuel Oil Prices, 1980 to Present (Constant 1980 Dollars)



Bureau of Labor Statistics

Dr. Merklein. The peak year, 1981, was 121.1 cents per gallon. The good last solid peak, December 1985, was 86.2 cents.

Since that time, as we all know, there has been a precipitous drop. We are now down to 72 cents, and that is certainly cause to stop and think whether the apprehensions were justified.

Mr. Yates. Which apprehensions?

Dr. Merklein. Concerning price increases and shortages.

Mr. Yates. They certainly were justified in 1974 and 1975, weren't they?

Dr. Merklein. Yes. I said in retrospect.

Mr. Yates. You mean as a Monday morning quarterback?

Dr. Merklein. That is true, but on Monday morning, one gets together and just rehashes the game and perhaps reorders his priorities and applies new strategies, sir.

Mr. Yates. What should our new strategies be?

Dr. Merklein. I think we should continue to run with the Weekly Petroleum Status Report, which shows essentially the same data, with a lag, and on a regional basis, as opposed to 14 states which have it state-by-state.

To come back to the apprehensions of fuel oil price escalations and shortages, the fact is that the real price of distillate has declined by 27 percent since 1981, and that figure does not include the estimated number that you have on the chart, which reflects the two-month decline we have just now had. And there has not been a shortage in more than six years.

It will be remembered that last fall, in particular, relatively low inventory levels prompted predictions, and unfounded predictions to some extent, perhaps reckless predictions, of wide-spread shortages during the current heating season.

We at EIA recognized the new inventory situation reflected no more than a shift in marketing strategies that in no way posed a threat to the U.S. public.

To forestall wide-spread public apprehensions, EIA went on record on its Short-Term Energy Outlook of October 1985 in an effort to assure the public there was no reason to fear a shortage.

Clearly, within the context of available resources, this program is of lower priority than other programs that EIA has conducted. And this, Mr. Chairman, concludes my prepared statement, and I will be glad to answer any questions that you might have.

Mr. Yates. Thank you.

[The statement of Helmut A. Merklein follows:]

Statement of the Honorable Helmut A. Merklein
Administrator, Energy Information Administration
Department of Energy
Before the
Committee on Appropriations
Subcommittee on Interior and Related Agencies

Mr. Chairman, members of the Committee, I am pleased to appear before you today to present the proposed Fiscal Year 1987 budget request of the Energy Information Administration, or "EIA" as we refer to ourselves. This request is for $59.7 million and 479 full-time equivalent staff years (FTE's). I consider this amount to be adequate to continue EIA's basic mission in 1987.

MISSION OF THE ENERGY INFORMATION ADMINISTRATION

The EIA is the Nation's primary source of comprehensive energy information. EIA provides relevant and timely energy data and analysis reports to the Executive Branch, Congress, State governments, and the public so that those who make decisions about energy are informed adequately to make those decisions well. EIA also provides energy data, analysis, and processing support to the Federal Energy Regulatory Commission and to other Department of Energy (DOE) offices to assist them in carrying out their responsibilities.

The EIA collects, evaluates, assembles, analyzes, and disseminates data and information that are pertinent to energy resources and reserves; energy production, consumption, distribution and technology; related economic and statistical information; and data and information that bear upon the adequacy of energy resources to meet this Nation's demands in the near and longer term future. This is in accordance with EIA's legislative mandate.

While administratively an integral part of the Department of Energy, the EIA is vested with a considerable measure of autonomy in determining both the information to be gathered and the content of EIA reports. In creating the EIA, the Congress meant to establish an unbiased source of energy information and analysis. Current subjects of interest to this Congress include petroleum prices, natural gas contracts, and tax reform. I am pleased to report that EIA continues to make a contribution to the national debate on these subjects by conducting special purpose analyses at the request of Congress. It is my intention to continue to manage EIA in such a manner as to maintain its reputation for providing high quality, objective information to the Congress, the Executive Branch, the States, industry, and the public.

USES OF EIA PRODUCTS

Over the past several years EIA has continued to develop and improve the statistical quality of its products so that it has become an integral component of the Federal statistics program. Several recent and varied uses of EIA products serve to illustrate this point.

The U.S. Trade Representative recently used EIA petroleum import data for an analysis of refined product trade issues and used uranium data and analysis to assess the potential impact of uranium trade restriction policy options. The Defense Fuel Supply Agency uses EIA petroleum price data each month to assess area market conditions for their petroleum procurements and for escalator indices in their contracts. The Military Sealift Command has used our petroleum supply data for logistical exercises in support of U.S. military requirements. The Bureau of Economic Analysis uses EIA's petroleum data for the Gross National Product accounts and for input-output analyses. The Bureau of Labor Statistics (BLS) uses our energy price data to verify the Producer Price Index and to calculate foreign crude oil price indices. Monthly electricity price data and residential energy consumption data are used by the BLS to make adjustments to the Consumer Price Index. EIA's domestic and international refinery models and consumption forecasts are being used by the National Petroleum Council in their study of worldwide refining trends, and the Electric Power Research Institute has adopted our industrial energy forecasting model for utility forecasting. EIA coal, electric power, and petroleum data are routinely used by the Environmental Protection Agency (EPA) for developing both area emissions estimates and new source performance standards. EPA also uses our petroleum data for analysis of motor gasoline lead phasedown activities. EIA coal production data are used, and often republished, by the National Coal Association, Associated Press, Businessweek, Energy User News, Industry Week, the Federal Reserve Board, and the Department of Labor. Our data on the various energy sources are published by the Census Bureau in their Statistical Abstract of the United States. The International Energy Agency uses EIA's information and analyses on energy sources as the official statistics to describe the U.S. energy situation in international forums and publications. Our residential energy consumption data are used in the annual report by the Senate Special Committee on Aging and were recently used in a special report for the Congress evaluating energy conservation and renewable energy tax credits. EIA's nonresidential buildings energy consumption data are used by the American Society of Heating, Refrigeration, and Air Conditioning Engineers to develop building code standards.

FY 1986 ACTIVITIES

During FY 1986, EIA is continuing to produce and provide a stable core of publications and analysis reports. This includes all major integrated publications, such as the Monthly Energy Review, the Annual Energy Review, the International Energy Annual, the Annual Energy Outlook, the International Energy Outlook, and the Short Term Energy Outlook. Also included are the major fuel-specific publications, such as the Electric Power Monthly, the Natural Gas Monthly, the Petroleum Supply Monthly, and the Petroleum Marketing Monthly. EIA will also produce the annual oil and gas reserves report, the Weekly Petroleum Status Report, and other weekly, monthly, quarterly, and annual reports. In addition, the Nonresidential Buildings Energy Consumption Survey will be funded and work will be completed on the redesign of this survey for fielding in FY 1987. EIA will continue to provide basic energy information support to the Federal Energy Regulatory Commission on a reimbursable basis to assist it in meeting the needs of its regulatory functions. EIA will also provide support to other EIA data users on a reimbursable basis, such as the Office of Civilian Radioactive Waste Management, the Strategic Petroleum Reserve Office, and the the Social Security Administration. Finally, EIA will continue to manage the DOE energy information forms clearance program and prepare the annual DOE Energy Information Collection Budget.

EIA is conducting several additional activities of interest to this Committee. Funding for the Manufacturing Energy Consumption Survey (MECS) was provided in the FY 1985 Continuing Resolution. A pilot test of the MECS has been successfully completed and the data collection form and instructions have been revised to incorporate the results of that effort. The first full scale MECS will be conducted by the Bureau of the Census (Bureau) for EIA later this Spring. The Bureau will field the survey under the joint authority of section 13(b) of the Federal Energy Administration Act of 1974 as amended (FEA Act) and section 9 of title 13 of the U.S. Code. The former is EIA's mandatory data collection authority and the latter provides complete confidentiality protection to the data collected by the Bureau under that authority.

The Financial Reporting System (FRS) will continue in 1986 as specified by Congress. This activity includes the collection and publication of financial and operating data on major energy companies.

In addition to the FRS and MECS, two other programs will be continued in FY 1986, consistent with congressional direction. First, EIA is conducting the State Energy Data System and its companion State Energy Price and Expenditures Data System. These systems include information by State on coal, natural gas, petroleum products, electricity, and nuclear power. Second, the State Heating Oil Grants Program will be funded in FY 1986. EIA coordinates this cooperative effort with 12 to 16 States to collect heating oil price and inventory data. In the conference report accompanying the FY 1986 Continuing Resolution EIA was directed to accomplish these two programs within available funds.

Finally, in February 1986 EIA was able to complete the purchase of the initial computer equipment configuration associated with our five-year computer replacement effort. This accelerated purchase allowed us, through decreased interest payments, to save $780,000, as compared with the purchase plan originally envisioned. The savings realized in FY 1986 by this purchase will help offset the funds needed by EIA to continue the State energy information systems and the State Heating Oil Grants program as directed by Congress.

IMPACT IN FY 1986 OF THE BALANCED BUDGET AND EMERGENCY DEFICIT CONTROL ACT OF 1985

FY 1986 reductions resulting from the Balanced Budget and Emergency Deficit Control Act of 1985 total $2.6 million for EIA. These reductions have generally been applied across all EIA activities. They will result in a reduction in quality control and maintenance for ongoing petroleum supply and marketing systems in such areas as follow-up data checks and frames maintenance. Quality checks of FRS data will also be reduced. A planned Coke Plant Report requirements analysis will not be performed. Several computer model updates will be curtailed or deferred including petroleum, natural gas, and electric power models. A classified international petroleum situation report will be changed from a quarterly to a semiannual cycle. Funding support for the Energy Modeling Forum, whose members include modelers in both the public and private sectors, will be terminated. In addition, there will be a slightly reduced level of effort in statistical support services, in publications and inquiry activities, and in planning and evaluation. We feel these reductions can be absorbed without a significant impact on our information products during FY 1986.

FY 1987 OBJECTIVES

EIA plans to remain an unbiased and relevant source of energy information in FY 1987. Recognizing the current emphasis on deficit reduction, the budget proposal includes modest program reductions in the areas of quality maintenance, modeling and analysis, and publication and inquiry activities. The request also proposes the elimination of some programs. The increases proposed in FY 1987 are primarily to cover the rising cost of administrative support services, especially for rent and telephones.

EIA will continue to provide the Executive Branch, Congress, State governments, industry, and the public access to information produced by the National Energy Information System, and will continue to manage the energy information collection clearance process for the entire Department, including the Federal Energy Regulatory Commission, and to produce the Department's Energy Information Collection Budget. In addition, EIA will continue to provide major energy data support on a reimbursable basis to the Federal Energy Regulatory Commission, the Office of Civilian Radioactive Waste Management, and other agencies, both within and outside of DOE.

EIA's total budget request does not differ significantly from the FY 1987 Base; that is, the FY 1986 budget adjusted downward for the reduction due to the 1986 provisions of the Balanced Budget and Emergency Deficit Control Act of 1985 and upward for inflation. However, there are several program changes within the total which I will now discuss.

NATIONAL ENERGY INFORMATION SYSTEM

The National Energy Information System (NEIS) contains the operational elements of the EIA. They are: the Oil and Gas program; the Coal, Nuclear, Electric, and Alternate Fuels program; the Energy Markets and End Use program; ADP Services; the National Energy Information Center; and the Office of Statistical Standards. The first three programs were referred to collectively in previous budgets as "Collection, Production, and Analysis," and the latter three as "Program Services." The request for NEIS is $49.1 million and 445 FTE's.

Decreases in the FY 1987 NEIS request total $3.3 million, about one-third of which is due to lower computer equipment purchase requirements as compared to 1986. Three programs are proposed for elimination and several quality maintenance activities will be cancelled, deferred, or reduced. Staffing for NEIS is requested at seven FTE's less than the 428 FTE's authorized in 1986. This two-percent staffing reduction is consistent with the proposed program eliminations and the reduced level of quality maintenance activities.

The budget request for the Oil and Gas information program is $12.4 million. In FY 1987, this program has proposed to eliminate one project and to reduce funding in the petroleum marketing area. The State oil price and inventory cooperative agreements which comprise the State Heating Oil Grant program is scheduled to be terminated. This program has been funded by EIA since FY 1979, with the exception of FY 1983. The States which participate in this program collect State-level residential price data. Some States also gather wholesale fuel oil price and inventory figures. This has enabled EIA and State energy agencies to monitor and evaluate heating oil price, supply, and distribution trends. However, much of the information produced from this program is available, on a weekly basis, through other EIA surveys. In addition, the program was originally created, and continues to exist, as a result of apprehensions of fuel oil price escalations and shortages. The fact is that the real price of distillate (U.S. average) has declined by 27 percent since 1981, and there has not been a shortage in more than six years. It will be remembered that last fall, in particular, relatively low inventory levels prompted predictions of widespread shortages during the current heating season. EIA recognized that the new inventory situation reflected a shift in marketing strategies that in no way represented these predictions. EIA said as much in its October 1985 Short-Term Energy Outlook in an effort to assure the public that there was no reason to fear a shortage. Clearly, within the context of available resources, this program is of lower priority than other programs that EIA is conducting.

The funding decrease in the petroleum marketing information area will result in cancellation of a data consolidation effort and a modest reduction in frames maintenance activities. The Office of Oil and Gas is also planning to cancel its crude oil surveillance field studies and the foreign energy supply assessment program (FESAP). We are currently negotiating with other agencies of the U.S. Government to determine whether they are interested in maintaining the FESAP. If so, EIA is willing to continue the program with outside funding. A reduction of five FTE's is also proposed for the Oil and Gas program, consistent with the program decreases just described.

The FY 1987 budget request for the Coal, Nuclear, Electric and Alternate Fuels program is $4.0 million. We are proposing several changes in this program. EIA will assume funding responsibility for the uranium industry viability assessment program mandated by Section 23 of Public Law 97-415. This activity was funded previously by the Department's Office of Nuclear Energy which, in the past, had been transferring money to EIA for program implementation. The coal information area will reduce its quality control program and will slow its publication schedule for some products. There is also a decrease of one FTE for coal information activities. The electric power information area will not pursue the planned expansion of its financial analysis capability. The nuclear information program will be decreased by one FTE and will defer updating the international portion of the model used to project the demand for uranium and enrichment services.

There are three major changes planned in the Energy Markets and End Use program, which has a proposed funding level of $3.7 million, and a general level-of-effort reduction of three FTE's. First, EIA is requesting funds to conduct the Residential Energy Consumption Survey and to plan the 1988 Manufacturing Energy Consumption Survey. The FY 1987 funding request for our end use program activities is several hundred thousand dollars less than in 1986, largely due to the fact that the residential survey is less complex, and therefore less costly to design and implement, than the nonresidential survey which was funded in last year's budget. In FY 1986, we placed each of our end use surveys on a triennial cycle. Since major changes do not occur with great frequency in these sectors, this schedule is sufficient to track and analyze major trends in each of these sectors.

Second, we are again proposing to terminate the Financial Reporting System (FRS) in FY 1987. This program is legislatively mandated by the Department of Energy Organization Act, Public Law 95-91, section 205(h). The Administration has submitted proposed legislation in the Congressional Reports Elimination Act of 1985 to repeal the requirement. As mentioned earlier, the FRS includes the collection and publication of financial and operating data on 22 major energy companies. This data collection is excessively burdensome and is duplicative of publicly available data. The series was established in 1977, in the face of considerable apprehension that the embargo-generated increase in crude-oil prices would bring a permanent windfall to the oil companies. As it turned out, and as some economists did predict, this was not the case. The windfalls associated with the 1973/74 rise in crude-oil prices, and a similar windfall in 1980/81, were both dissipated through increased drilling and exploration efforts in the largely competitive environment of the oil and gas producing industry. Today, the major oil companies collectively have a financial performance, in terms of both returns on assets and returns on owners' equity, that is well below that of the Standard and Poor 400 Industrial Corporations, taken as group. Moreover, the recent and dramatic decline in crude oil prices is subjecting the industry to a depression, the worst it has had in the past decade, so that all activities not directly related to productive efforts become doubly burdensome and would ordinarily be eliminated. Finally, financial accounting standards have evolved rapidly since 1974, so that data (especially reserve data) that were hard to get a decade ago are today required to be included in quarterly and annual corporate reports. This coupled with the fact that most of these data are already collected and published by commercial enterprises, at a time when it is critical to control government spending, make a convincing case that the time for eliminating the FRS is now. I strongly urge the repeal of this burdensome requirement.

Third, EIA is proposing to discontinue the State Energy Data System, its companion State Energy Price and Expenditures System, and related reports. These systems and reports provide State estimates by energy source and economic sector by year. Input for the program is mostly derived from EIA's primary data systems. Maintenance of the primary systems has higher priority than publication of non-emergency estimates derived from them. In addition, many State-level consumption estimates are derived from sales, distribution and deliveries data; they are not collected directly from consumers. Accordingly, they reflect the results of various estimation procedures and data series that serve as mere surrogates for consumption.

EIA's largest program decrease ($1.2 million) is in the ADP Services program and it is primarily the result of lower computer equipment purchase requirements as compared with 1986. As mentioned earlier, EIA is in the process of implementing a long-term computer replacement effort. FY 1987 represents the third year of a five-year funding plan.

The National Energy Information Center, our public information window to the world, will increase by two FTE's to implement and maintain a centralized reports preparation program using an automated publications system. There will be an offsetting reduction for other publications services, such as editing and microfilming, consistent with decreased contract funding in this area.

The Office of Statistical Standards is responsible for assuring the overall statistical quality of EIA's information products. To assure quality, this program, among other tasks, conducts audits of EIA's information products. This area will experience a small reduction of funding in FY 1987 which will result in the performance of one less system audit and the discontinuation of an effort to develop model evaluation techniques. An increase of one FTE is requested for statistical review of EIA products. The budget request for these last three programs is $10.0 million.

POLICY AND MANAGEMENT

The Policy and Management program provides for overall EIA direction by the Administrator and his support staff, planning, budgeting, contract management, and other administrative functions and services. The FY 1987 proposal of $10.5 million and 34 FTE's includes a program increase of $2.6 million to meet the funding requirements for administrative support services provided by the Department's Office of Management and Administration. This increase is largely attributable to higher telephone costs associated with a new DOE telephone system and vendor, and General Services Administration increases in the standard level user charges for building space. Decreases in the Policy and Management area will result in elimination of planned improvements to our automated management information system, and contract studies on the relationship and consistency of EIA's data and modeling systems will be phased out in FY 1987. A small in-house systems integration function will continue.

I believe that EIA's FY 1987 request is adequate. It allows only two major increases. Since these are in non-discretionary areas, they have to be accommodated by offsetting program reductions elsewhere. All of the programs that EIA is proposing for elimination in FY 1987 are, in my estimation, of sufficiently low priority to warrant this action. We all, of course, are cognizant of the impact that dangerously high deficits can have on the economy of this Nation. My plan, in taking action against this deficit, is to insist on resource levels that are no more than what is absolutely necessary to accomplish program objectives. In the case of EIA's FY 1987 budget, I believe that the recommended resource levels are reasonably sized to accomplish EIA's basic objectives.

I will be glad to answer any questions the Committee may have.

OMB BUDGET

Mr. **Yates**. Your request to OMB was accepted at the levels you submitted to OMB, was it not?

Dr. **Merklein**. That is correct.

Mr. **Yates**. Did OMB ask you to change any priorities?

Dr. **Merklein**. No. Those priorities come straight from us.

Mr. **Yates**. All the increases and decreases come from you, right?

Dr. **Merklein**. That is not true. I am sorry.

Mr. **Yates**. Okay.

Dr. **Merklein**. Some increases are out of our control. The administrative support, which is mostly telephone and rent, is out of our control, and that is departmentally issued.

Mr. **Yates**. At the start of your statement, you indicated that the budget would be adequate for your purpose. Did I understand you right?

Dr. **Merklein**. Yes, sir. I believe it would be.

QUALITY MAINTENANCE REDUCTIONS

Mr. **Yates**. Well, on page three of your statement, you say this:

> The reductions will result in a reduction in quality control and maintenance for ongoing petroleum supply and marketing systems in such areas as follow-up data checks and frames maintenance.
>
> While quality checks on FRS data will also be reduced, several computer model updates will be curtailed or deferred.

Dr. **Merklein**. Mr. Chairman, if you will give me one minute to get my papers in order——

Mr. **Yates**. Sure.

Dr. **Merklein**. I will be happy to——

Mr. **Yates**. I find that difficult to reconcile with a statement that your budget is adequate.

Dr. **Merklein**. Yes, sir. That is on page three?

Mr. **Yates**. Yes. Last paragraph on page three.

Dr. **Merklein**. I will be brief on this question.

The first question you had, I believe, was reduction in quality control and maintenance for ongoing petroleum supply and marketing systems.

Mr. **Yates**. Are those of importance?

Dr. **Merklein**. Let me tell you what they encompass. Primarily, we are dealing with highway diesel fuel consumption for which we have three data series, two that are our own—our petroleum supply data series and our petroleum marketing data series—and a third series which is from the Federal Highway Administration sales and tax numbers.

Perhaps it would be preferable if we only had one of them; then we wouldn't have discrepencies. There are discrepencies of this small item, highway diesel fuel, of a very small amount, two to three percent.

We would have preferred, given the resources, to perhaps try to resolve those small percent deviations. On a small item, we simply are not going to do this. We have not done it in the past. I don't think it is of sufficient importance to warrant considerable——

Mr. YATES. When you use the term "quality control" to me, perhaps an uninitiated person, you are talking about something that seems to me to be of importance.

Dr. MERKLEIN. Can I address the question of quality control in toto?

Mr. YATES. Sure. Would love to. We would like to know how much you have budgeted for quality control in fiscal year 1987, which of the specific actions you propose to defer and eliminate, what the effect will be and how long will it be before your data becomes measurably less reliable.

If quality control is impaired, does not your data become less reliable?

Dr. MERKLEIN. In most of the areas where we are talking about quality control, we are dealing with improvements in quality control that we are not going to do.

You should know that I am very conscious of the fact that whatever we do, we should do right. This is why we are asking for elimination of certain projects in toto.

We are, as a matter of fact, while we are incurring a decline of six full-time equivalents, making internal realignments to the extent that one person will be added to the Office of Statistical Standards in the face of declines of everywhere else.

We are very conscious of quality control.

QUALITY CONTROL ACTIVITIES

There are three items that one might be interested in in terms of quality activities in EIA in 1985, and where we will be in 1986.

In 1985, in terms of model documentation, we had 23 models fully documented. We will, by the end of 1986, have 34 models fully documented.

Congressman Murtha, the question was on quality control, and I have just started into this, and I started with model documentation. We had, by February 1985, a total of 23 of our models fully documented.

By the end of 1986, we will have 34 models fully documented, up from 23. By February 1985 we found five models deficient, and today we have only one model deficient.

So, we have certainly progressed in this area. We had a special allocation on the order, if I am correct, of about $2 million to reduce our backlog in FY 1985. We had a total of four million dollars in 1985 and $2.4 million in 1986 for quality control.

The second item in quality control concerns data system documentation. In 1985, we had 42 systems fully documented. By the end of 1986, we will have 61 systems fully documented; updated in 1985, were 24 data systems. To be updated by 1986, there will be seven.

Of the existing data systems, there will, however, be additional new systems, seven new systems are scheduled in FY 1986 for a total of 14.

The third item in quality control is data system audits. In 1985, we had done 13 audits, compared to 10 each in 1983 and 1984.

The number of audits that remained at the end of 1985, that remained to be done, was 59. The number of audits we will be doing in 1986 is 13, including some re-audits from last year. And the remaining number will be 49 by the end of the year.

We have not slacked up on quality control. I have asked earlier, with some emphasis, for the elimination of two programs precisely because I feel, in the order of priorities as we have them, we should do the programs that we do well, and we should not generally come down overall and let go on the quality of the data.

The data are used for many things, including emergency planning. We can't afford to have incredible or unusable or biased data.

Mr. MURTHA [presiding]. How much would it take to keep your control maintenance program on the same sort of schedule you envisioned in 1986, before Gramm-Rudman?

Dr. MERKLEIN. I think we are on the schedule that we need to be. I think we are moving—well, let me reiterate.

We had a one-time infusion of money to catch up with the system. We had an extraordinary infusion of money to catch up with our quality control. We have spent the money. We have caught up. We are now on target.

So, if you compare 1987 with 1986, we will be down, of course. It looks down, but it is really—we are running off the catch-up work that we had done. I feel comfortable about our quality control. There is no question about it.

I do, however, want to again stress that our request to do away with three programs, or two programs that I have mentioned, comes from the feeling that quality is all-important.

Please let us do away with perhaps a program that is not needed so badly, but keep the others in top shape.

STATE HEATING OIL GRANT PROGRAM

Mr. MURTHA. If Congress did not provide funds for the state heating oil program, how difficult would it be to reconstitute the program at a later date?

Dr. MERKLEIN. The heating oil program costs, if I remember correctly, $190,000. If an emergency occurred—I think that is what you have in mind—we would throw all our resources into that emergency. That goes for emergencies everywhere.

I just don't think we are in an emergency situation or anywhere near an emergency situation on heating oil, given the price declines and the internationalization of the markets today where, for example, shippers direct supplies to the Rotterdam markets for as little as five cents differentiation on heating oil prices between Rotterdam——

Mr. MURTHA. Five cents?

Dr. MERKLEIN. Yes, sir. That is about the price of transporting the heating oil, from Rotterdam to New England, and, after that, arbitration takes place.

Heating oil shifts massively, and we have seen it this winter where there was a massive increase in shifts—I may be able to show that to you. If not, I want to submit the figures.

[The information follows:]

HEATING OIL SUPPLY

Imports are a significant source of supply of distillates to the United States, and some areas of the country are more dependent than others on imported oil. In December 1985, for example, distillate imports amounted to about nine percent of national supply, but satisfied almost 18 percent of the demand on the East Coast. A large part of imports to the East Coast states comes from the Virgin Islands and Venezuela.

When prices in Europe exceed those in the United States, supplies are diverted from the East Coast to Europe because the costs of shipping and handling from the Caribbean and South America are roughly the same for either destination. Recently, even though prices have been falling worldwide, the Europe-U.S. price relationship has been subject to substantial changes. In December, New York Harbor spot prices for heating oil exceeded those on the Rotterdam market by as much as four cents per gallon. Through most of January, the relationship remained favorable to the United States. In the last week of January, however, severe cold weather in Europe in combination with low stocks left the Rotterdam market with relatively firm prices. At the same time U.S distillate stocks were in the normal range and U.S. spot prices fell. By the end of February, Rotterdam spot heating oil prices exceeded those in New York Harbor by almost 13 cents per gallon.

The effect of the relative supply situation of the U.S. and Europe and the resulting spot price shift is seen in U.S. distillate imports. During January, when prices were higher in the United States, distillate imports average almost 400 thousand barrels per day. U.S. imports dropped immediately after the change in the New York-Rotterdam price spread. In fact, during the last three weeks of February, U.S. distillate imports averaged only 74 thousand barrels per day.

FOREIGN SUPPLY ASSESSMENT

Mr. MURTHA. What are the current uses for the crude oil surveillance field studies you propose to delete?

Dr. MERKLEIN. FESAP studies are studies that deal with crude oil that exists in other countries or regions outside the United States.

These are, in a way, supply pattern questions. I think they are reasonably reliable data available to the industry.

However, I should tell you also that while I personally, and EIA as an institution, feel there is not a compelling need for those studies, given the budgetary reality we live in.

We are talking to some sister organizations to see if there is a distinctly felt need for those, and if so, would they pay for them.

One organization that we are talking to——

Mr. MURTHA. Who uses it, and who are you talking to?

Dr. MERKLEIN. I would rather discuss the organization we are talking in private with you. I do not know whether that would be a good thing to discuss in public.

[The information follows:]

FOREIGN ENERGY SUPPLY ASSESSMENT PROGRAM

The Foreign Energy Supply Assessment Program (FESAP) is used primarily by researchers and specialists in international petroleum geology. Derived from public data, the FESAP reports assess available foreign petroleum supply for both the United States and other countries, and are useful for contingency planning. The reports, which contain delivery cost estimates, can be used to determine the effects of foreign supply on domestic production. The reports are also sources of information on production, drilling, discoveries by basin, and basin analysis.

FESAP reports have been used by the Department of Energy, Defense, State, and Interior; the Congressional Research Service; the Central Intelligence Agency (CIA); the World Bank; committees of the National Academy of Sciences; and private sector groups including academia and industry. The FESAP provide a basis for the Department of the Interior's World Energy Resources Program, which estimates future petroleum discoveries in basins worldwide. Potential funding sources for the FESAP studies are the Departments of Defense, State, and Interior, and the CIA.

EMERGENCY PREPAREDNESS

Mr. **Murtha**. Is it any use to emergency preparedness?

Dr. **Merklein**. We are very conscious of emergency preparedness. I can't say it is of no use, but there are so many other things that are so much more important.

Let me give you an example. We are, at EIA, now conducting our Manufacturing Emergency Energy Consumption Survey. In that study, we are asking industrial organizations for fuel substitutability, switching ability. We have a number at EIA, but do not feel comfortable with it because it is not a solid statistically acceptable number.

We are going to all kinds of lengths to deal with what I perceive to be a real problem should an emergency occur. I would think the FESAP study is a long-term program that will be of little help week-to-week, month-to-month, in an emergency, and again, there is back-up material everywhere.

CONTINGENCY ANALYSIS

Mr. **Murtha**. On page 221, you plan to reduce support to the department's contingency analysis. Would you explain why and what the impact is?

Dr. **Merklein**. This is something I have to tell you that we are discussing at the department. I have to be candid with you. Within the department, we have not come to a conclusion. We are now doing this report on a quarterly basis and we would like to do it on a semi-annual basis.

The nature of the report is classified, and I would like to discuss it with you in private, if I may. But we would not intend to delete it. We intend to put it on a slower cycle.

Mr. **Murtha**. If you will answer those other two questions for the record or privately to the staff.

Dr. **Merklein**. Yes, sir.

[**Committee note**.—The agency provided inserts, where appropriate, within previous discussions.]

CONSUMPTION SURVEYS

Mr. **Murtha**. On the consumption surveys, does your budget continue to provide for consumption surveys every three years in the major energy use areas?

Mr. **Merklein**. Yes, sir, they do. Right now we are in the position of having completed a pilot study on the manufacturing Energy Consumption Survey. It was a good pilot study; there were minor changes in wording. I suspect the final study will go to OMB for final approval within a couple weeks and that the survey itself will be mailed out in May or June.

Another study is what we call the NBECS—the nonresidential Building Energy Consumption Survey—I have just ten days ago approved the draft questionnaire on that study. It now goes through its course. It will now be printed in the Federal Register for comment; we are fully committed to do that.

The last one is the Residential Energy Consumption Survey. Coupled with it is the Residential Transportation Study. It is on course. We do plan to do it. There are no plans to scrap that.

Mr. **Murtha**. In conjunction with the status of the Manufacturing Energy Consumption Survey, will OMB allow you to go ahead with the survey without cancelling the existing survey done by the conservation program of the department?

Dr. **Merklein**. I cannot speak for OMB. I think they probably will. I must tell you also that I would hope that the conservation study eventually will be eliminated. As you probably know, we are at the staff level discussing on all sides how to go about it. There is generally very little excitement about doing away with this duplicative effort.

I think our study will be statistically more meaningful. But then it is over a three-year cycle. I think it is sufficient for a consumption study. I have said I will give the emphasis to consumption studies as soon as there is a consumption embargo. We have had supply embargos, and they have had my immediate attention. The consumption surveys, including the Manufacturing Energy Consumption Survey will be on a three-year cycle.

I would sincerely hope that we can all get together—but it is out of my budget—and eliminate this conservation study.

Mr. **Murtha**. What is the status of the legislative attempts to delete the old survey?

STRATEGIC PETROLEUM RESERVE

Dr. **Merklein**. It is in discussion at the staff level.

Mr. **Murtha**. Special investigations and publications. In last year's testimony, on page 30, you stated you were studying the effect of the 489 million barrel strategic petroleum reserve versus the 750 million barrel reserve on prices and supplies. What were your results?

Dr. **Merklein**. I think I should have to present that for the record. We have done our share of studies under very tight time constraints, including the President's tax proposal. We are deeply engulfed in gas. That has slipped my mind.

[The information follows:]

Strategic Petroleum Reserve Study

The study addressed the potential impacts of a 5 million barrel per day net disruption in worldwide petroleum supplies in 1990. Several alternative disruption durations were addressed ranging from less than 3 months to one year. Disruption assumptions were supplied to EIA by the requestors of the analysis, Congressmen Dingell, Sharp, and Broyhill. The impacts of drawing down both a 489 million barrel Strategic Petroleum Reserve (SPR) and a 750 million barrel reserve were assessed. The benefits of increasing drawdown rates by enhancing the SPR system were also included in the assessment.

Several results of the analysis are:

Drawdown of the SPR has significant beneficial economic impacts to areas such as net imports and costs, oil consumption, and GNP; the larger the drawdown rate, the greater are the beneficial impacts;

Additional benefits provided by the 750 million barrel reserve are relatively small compared to the basic benefits provided by the enhanced 489 million barrel system;

For a disruption lasting one year, drawdown at either maximum or level rates over time shows about the same average beneficial impacts for a given system;

Drawdown at maximum rates (3.96 million barrels per day in the 750 million barrel system and 3.25 million barrels per day in the 489 million barrel system) as compared to level rates show much greater benefits during the first 3 months of the disruption;

For a disruption lasting one year, drawdown of the enhanced 750 million barrel system at maximum drawdown rates when compared to the drawdown of the enhanced 489 million barrel system at maximum drawdown rates results in: world oil prices that are from $3-$4 per barrel lower; a lower U.S. import bill by $9.2-$15.4 billion; 0.3 million barrels per day more of U.S. oil consumption; and an improvement in real GNP of 0.1-0.3 percentage points.

ANNUAL ENERGY OUTLOOK

Mr. **MURTHA**. Your publication, Annual Energy Outlook 1984, shows base case oil imports of 8.65 million barrels of oil a day by 1995. With low oil prices, your projections jump to almost 12 million barrels a day of imports. Are the low prices in that document above or below the levels of prices you would project now based on today's world prices?

Dr. **MERKLEIN**. Mr. Murtha, we are now at the printers with a new Annual Energy Outlook. We have cut back on our import projection considerably, primarily because of a feeling we had that the investment on the consumption side in energy saving devices are of long duration and that the declining crude oil prices, even to the extent that we have it today, are not likely to bring a rebound on consumption the way we had it before the high-priced energy era. The new base case coming out maybe this week, but more likely next week, the new Annual Energy Outlook, shows 1995 imports of 7.7 million barrels per day compared to the 8.7 million barrels per day in last year's report.

The high case, I submit to you, was untenably high last year in retrospect, when it was 11.7 million barrels per day in 1995. We project 10 million barrels per day this year. This is lower prices and higher economic growth. The low case, on the other hand, which last year was only 5.2 million per day of imports, has risen to 6.1 million barrels per day of imports in 1995. That is, we have a smaller and more realistic gap between the high case and low case.

So we really have wrestled with ourselves on this one and have come to the conclusion that even under today's scenario, the high import case is perhaps the one that pertains, but even it may be high. In any event, it is only 10 million, not 11.7 million barrels per day.

Mr. **MURTHA**. Please answer the rest of the questions for the record. Thank you very much.

Dr. **MERKLEIN**. Thank you, sir.

[Questions and answers provided for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Quality of Data

Question: In FY 1985 the Congress provided you $4 million for quality maintenance. In FY 1986 we provided you the $2.5 million you said was necessary to continue to maintain or upgrade the quality of your products. Your statement says that Gramm-Rudman will result in a decrease in quality control and maintenance. How much is that in dollars?

Answer: EIA's current estimate for quality maintenance contract funding for FY 1986 is $2.3 million. In addition, about 30 FTE's are allocated for these activities. Decreased funding for quality maintenance resulting from Gramm-Rudman is $.2 million.

Question: How much in reduced work?

Answer: Work will be reduced in the following areas: updating of the petroleum marketing survey frame without planned enhancements; cancellation of a formal requirements review for coke plant data, withdrawal of funding support to the Energy Modeling Forum sponsored by Stanford University, and elimination of planned improvements to the Residential Energy Consumption Survey.

Question: In FY 1987, your budget states in at least seven places that quality control and maintenance activities will be reduced or delayed. How much do you have budgeted for quality control and maintenance in FY 1987?

Answer: In FY 1987, EIA estimates that about $1.7 million in contract funds will be needed for quality maintenance in addition to 30 FTE's.

Question: What specific actions will you defer or eliminate?

Answer: In addition to carrying forward the FY 1986 actions, reductions in FY 1987 are primarily aimed at not implementing planned improvements, rather than at deleting existing quality controls. The eliminations include consolidation of petroleum marketing data bases; an effort to resolve long-standing problems with diesel fuel, kerosene, and propane survey frames; improved survey and data processing techniques for the energy consumption surveys; and electric power, coal, and energy markets model enhancements. Other actions planned include reduction in the number of field follow-up checks for petroleum supply data, deferral of a formal requirements review for industrial coal consumption, and making model data base updates less frequently.

Question: What is the effect?

Answer: These funding reductions are not expected to have a major impact on the overall integrity of EIA's products. Most of the reductions are for planned improvements, which means that the ability to make EIA products better may be somewhat reduced, not that EIA products will be permitted to deteriorate.

Question: How long will it be before your data becomes measurably less reliable?

Answer: The planned quality maintenance reductions are not expected to result in any EIA program falling out of compliance with EIA standards, which provide the benchmark for determining whether EIA data are reliable enough. EIA has reduced its model and system documentation backlog and conducted large frame update surveys for its major systems; therefore, recurring documentation and frame costs will not be as great. Our goal is to include documentation in ongoing program operating costs.

Question: By your budget actions you seem to make quality a low priority item. Why?

Answer: EIA continues to place a high priority on making quality maintenance investments to prevent deterioration of products and to keep programs in compliance with standards. Mostly quality maintenance investments designed to achieve improvements are proposed for elimination in the FY 1987 budget because they are considered to be a lower priority than continuing basic data series and forecasts.

Report Reductions

Question: Once again you propose to eliminate reports that are either required by law, or have been perennially supported by Congress. Please specify which reports are being deleted and how much it would cost to continue each. What legislation is proposed to delete such reports and what is its status?

Answer: The Energy Information Administration proposes to eliminate the reports produced by three programs: the Financial Reporting System, the State Energy Data System/State Energy Price and Expenditures Data System, and the State Heating Oil Grant Program. The Financial Reporting System would cost $365,000 above the $150,000, requested in the FY 1987 budget, which is needed to retain an energy industry financial analysis capability. The State Energy Data System/State Energy Price and Expenditures Data System would cost $95,000, and the State Heating Oil Grant Program would cost $190,000. The Financial Reporting System is the only program among these which is specifically required by law, Section 205(h) of the Department of Energy Organization Act (P.L. 95-91); the others are conducted under the Energy Information Administration's general data collection authorities. Elimination of the Financial Reporting System is proposed in H.R. 2518, the Congressional Reports Elimination Act of 1985. That bill is under consideration by the House Committee on Government Operations.

Surveillance Field Studies

Question: What are the current uses for the surveillance field studies you propose to delete? Who uses it?

Answer: A series of regional natural gas deliverability studies have been prepared under the surveillance field program. The last report in the series is scheduled for publication this year. These studies in their present form have a very limited audience. They are used primarily by analysts in the government, academia, and industry to forecast future gas availability.

Energy Modeling Forum

Question: You plan to cancel EIA's annual support to Stanford University's Modeling Forum. How much does that support cost?

Answer: The EIA provides about $25,000 a year in support of the Energy Modeling Forum.

Question: What kind of support is it, and what is its significance?

Answer: The Energy Modeling Forum provides an opportunity for modelers in both the public and private sectors to meet and review energy models and discuss energy modeling issues and advances. Each participant uses his or her models to generate forecasts on a chosen topic based on a common set of assumptions. The results are compared and analyzed to identify strengths, weaknesses, and differences among models. Peer contact does not depend solely on such forums. It is also fostered through individual contacts and literature review.

Support for Contingency Analysis

Question: You plan to reduce support to the Department's contingency analysis. Explain why and what the impact is.

Answer: We propose, for budget reasons, to change the publication schedule for a classified report on the potential impacts of an oil supply disruption from a quarterly to a semiannual basis. While the contents of this report are classified, the work basically involves an analysis of assumed oil supply disruption scenarios and their estimated economic impacts. We believe that a semiannual schedule should be sufficient to maintain a readiness for the types of analyses that would be required in a real emergency. We propose to publish the reports in the Fall and Spring each year, to provide peak winter demand and slack summer demand projections.

Thus we do not see this proposal as a reduction in support to the Department's contingency analysis capability. In a real emergency, EIA is prepared to provide an immediate analysis of the situation with the specific emergency event in mind, regardless of whether the previous reports were on a quarterly or semiannual cycle.

Question: How much support do you provide?

Answer: The annual cost for the quarterly report is $200,000. The semiannual schedule will reduce that cost to about $108,000.

Question: Does this affect emergency preparedness operations?

Answer: While we do not anticipate a significant impact on emergency preparedness operations from this change in schedule, we are working with the users of this report to determine their needs and to ascertain whether they wish to provide funding to continue the publication on a quarterly basis.

Impact of Imports on Refineries

Question: Also in last year's testimony, you were doing a study on the impacts of product imports on refineries. Is it complete? What were your conclusions? Please provide the Committee a copy of the study for its files.

Answer: As discussed in last year's testimony, the National Petroleum Council (NPC), at the request of the Secretary of Energy, undertook a comprehensive study of the U.S. refining industry, including the effect of product imports. The results of the NPC study are scheduled for release later this year.

Increase in Crude Oil Reserves

Question: How significant is your report that crude oil reserves increased 2.6% during 1984, the first increase since 1970?

Answer: The test to determine the long-term significance of the 1984 increase in crude oil reserves must wait for two or three years to see if a change in the long term trend of general decline is indicated. The increase is, in itself, an encouraging indication that the petroleum supply situation changed in the right direction in 1984.

Question: Isn't most of the increase because of revisions of estimates in proven fields rather than discovery of new fields?

Answer: Yes. About 65 percent of total crude oil reserve increases in 1984 came from positive revisions to the reserve estimates for previously discovered fields. Most of the increases were due to continued field development and enhanced recovery projects in Alaska and West Texas, and the development of thermal recovery projects in California. Heightened revisions mean that previously discovered fields are being vigorously and efficiently developed. In 1984, new resource discoveries, the sum of extensions, new field discoveries, and new reservoir discoveries also increased, but remained below the 1981 peak in the EIA data series. The combination of higher than average revisions and higher than average new resource discoveries in the same year is positive. Given the ongoing debate on offshore drilling, it is of interest to note that most of the new field discoveries in 1984 took place off the California coast.

Computer Requirements

Question: Your statement says that computer requirements account for about one-third of the budget reduction in EIA. How much are you requesting for computer equipment?

Answer: We are requesting $8.5 million for ADP Services in FY 1987, $2.5 million of which is associated with our five year computer replacement effort.

Question: You state that you have a 5-year plan for computers. What is its total cost?

Answer: The current cost estimate for the entire computer replacement over five years is $11.3 million.

Question: What is the total cost by year?

Answer: The current computer replacement cost estimate by year for the period 1985 through 1989 is $4.4 million in 1985, $3.3 million in 1986, $2.5 million in 1987, $0.7 million in 1988 and $0.4 million in 1989.

Question: How does that compare to last year's plan?

Answer: Last year's plan did not anticipate the completion of the purchase of the initial configuration in FY 1986. EIA was able to make that purchase early largely due to dramatic price decreases within the computer industry, which were reflected in the proposals received during the competitive procurement process. In addition, this purchase resulted in interest savings of about $800,000 over the time payment plan originally envisioned by EIA. As a result, the outright purchase value for the entire system declined from about $13.5 million in the original plan to $11.3 million under the current plan.

Question: You are postponing procurements of some equipment. What types and for what cost?

Answer: The postponement of equipment procurement is for telecommunications equipment and is not associated with our computer replacement effort. We had planned to replace some older, less-efficient terminals, modems, and printers and this replacement will be delayed, resulting in a savings of about $200,000 in FY 1987.

Question: How long?

Answer: At this time we expect to delay the replacement for one year.

Question: What will be the operational effect?

Answer: Some increased maintenance of the old equipment will be required. This will not significantly affect our current capability.

Question: Your budget also states you are reducing funds for your computer facilities contractor. What support are you eliminating and for what cost?

Answer: There will be a general level-of-effort reduction in services provided to EIA computer and equipment users. For example, there will be less manning of the user services centers, small decreases in word processor and personal computer maintenance and training, and a longer wait for computer printouts. The total cost reduction will be about $100,000.

Question: What is the operational effect?

Answer: The operational effect should be relatively small.

Policy and Management

Question: Your budget requests an overall increase of $2,800,000 in policy and management. What for?

Answer: After adjusting for inflation and the effect of Gramm-Rudman, the net increase over FY 1986 in Policy and Management is $2.3 million. This increase is virtually all accounted for by two items. GSA charges for building space will increase by $1.4 million, to a total of $3.3 million in FY 1987. Estimated costs for telecommunications services and the procurement of a new DOE commercial telephone system are projected to increase by $.9 million to a total of $1.7 million in FY 1987.

Question: Please provide the details of your administrative expenses for 1986 and 1987 and explain the differences.

Answer: The major differences in administrative support services expenses from FY 1986 to FY 1987 are increases for rent and telephones. A detailed report of these expenses follows.

ADMINISTRATIVE SUPPORT COSTS
(Dollars in thousands)

	FY 1986	FY 1987
PERSONNEL		
Departmental Training (Non-Gov't)	$ 9	$ 10
Headquarters Training:		
Headquarters Training (Gov't)	10	8
Headquarters Training (Non-Gov't)	12	15
Health Services:		
Health services (Non-Gov't)	3	5
Health Services Supplies	2	2
Subtotal	36	40
ADMINISTRATIVE SERVICES		
Engineering and Facilities:		
SLUC-Headquarters	1,933	3,317
Miscellaneous Space Rental	11	11
Germantown Building Operations	1	1
Germantown Guard Service	1	1
Forrestal Building Operations	136	110
Forrestal Guard Service	185	175
Electronic Maintenance	85	78
Miscellaneous-Engineering and Fac.	16	11
Conferencing Support	21	69
Electronic Supplies	27	29
Subtotal	2,416	3,802
Reference and Information Management:		
Supplies & Materials - Library	130	124
Subtotal	130	124

Printing and Graphics:		
Copier Rentals	73	68
Photo Services	45	45
Forms and Letterheads	59	38
Congressional Printing	72	137
Miscellaneous Reports & Publications	850	750
Miscellaneous Printing & Building	8	50
Federal Register	51	51
Federal Register Overruns	2	2
Copier Equipment Repair	66	83
Visual Archives	14	15
Publication Design & Production	203	203
Distribution Contracts	31	26
Graphics Services	130	130
Equipment Repair - Printing	5	2
Equipment Repair - Graphics	19	21
Copy Contract - Support	29	41
Photo Supply and Materials	11	12
Graphics Supplies and Materials	5	6
Printing Plant Supplies	7	7
Equipment Rental - Printing	1	3
Subtotal	1,681	1,690
Logistics Management:		
Rent of Trucks - GSA	2	2
Freight and Mailing (Non-Gov't)	15	16
Contract Messenger	95	104
Equipment Rental - Logistics	6	7
Postage	583	645
Moving and Supply Service	65	74
Equipment Repair & Maint. - Logistics	34	37
Logistic Services (Non-Gov't)	9	10
Logistic Services (Gov't)	1	7
Stock Supplies	49	58
Non-Stock Supplies	92	92
Microfilm and Fiche	8	6
Non-Capital Furniture & Furnishings	16	66
Copier Support	47	37
ADP Supplies	20	21
Supply Services	88	74
Subtotal	1,130	1,256
Administrative Support:		
Household Goods - Domestic	12	12
Storage	3	3
Subtotal	15	15

COMPUTER SERVICES & TELECOMM. MGMT.		
Operations:		
ADP & Word Proc. Equipment Maint.		
Telecommunications:	0	31
FTS	465	726
Commercial Telephone	276	934
Office Director:		
Support Services	54	47
Subtotal	795	1,738
TOTAL	6,203	8,665
Reimbursement from FERC	- 280	- 280
FY 1986 Adjustments for General Reduction, Gramm-Rudman, Revised Estimates (Distribution to be Determined)	- 378	
TOTAL APPLIED TO POLICY AND MANAGEMENT	$ 5,545	$ 8,385

Question: Which of these expenses are allocated by the Department's Office of Management and Administration?

Answer: All of the administrative support services for EIA are allocated by the DOE Office of Management and Administration, based on EIA's percentage of total DOE population or actual expenditures.

Question: The FY 1986 budget assumed a 10% reduction in administrative expenses. Based on your FY 1987 submission this reduction was not realistic. Is that correct? How much of that failure to meet targets was under your control?

Answer: For FY 1986, the current estimate for administrative expenses is within $90,000 of the 10 percent reduction target; therefore, the target appears to have been basically realistic. The difference in administrative costs between FY 1986 and FY 1987, after inflation, is due largely to three factors not related to the 10 percent reduction. First, there was a general reduction of 0.6 percent in the FY 1986 Continuing Resolution. Second, a 4.3 percent Gramm-Rudman reduction was applied to the FY 1986 value. Third, costs for rent and telephones, two non-discretionary items, will rise significantly in FY 1987. After these three factors are applied, the difference between the FY 1986 and FY 1987 estimates is roughly equal to inflation.

Staffing

Question: Your budget justification states that EIA entered FY 1986 understaffed and the FY 1987 budget assumes continued hiring to meet the personnel target of 421 for FY 1987. Please explain how that reconciles with the table on page 223 of your budget which shows 426 actual personnel in FY 1985 and a projection of 428 in FY 1986, both figures being above your 1987 target, not below it.

Answer: The referenced narrative in the budget justification describes onboard staffing, whereas the table refers to full time equivalent staff years (FTE). The EIA entered FY 1985 at an onboard staffing count about 20 above our authorized National Energy Information System (NEIS) FTE level of 432 for that year. Throughout the year we lost considerably more staff than we were able to replace so that, although NEIS expended 426 FTE throughout FY 1985, we ended the year with an onboard count of about 415. Thus we entered FY 1986 with an onboard staff level below our authorized FTE level.

Data Collection Plans

Question: EIA is planning to send EIA Forms 782 A, B, C, "Petroleum Product Price and Sales Volume," EIA Forms 856, 14, 182, "Foreign and Domestic Crude Oil Cost," and the EIA 821, "Fuel Oil Sales" to the Office of Management and Budget for clearance as a package. These Forms are required by Section 507 of the Energy Policy and Conservation Act as amended by the Emergency Energy Preparedness Act of 1982. Do you plan to reduce the level of data obtained from these reports? If so, in what way? Does the budget you submitted assume that the same level of petroleum marketing data will be collected and published from these forms?

Answer: We do not currently foresee any major changes in the package of petroleum marketing forms EIA expects to send to the Office of Management and Budget for clearance this fall. The FY 1987 budget request assumes that the operating costs for these surveys will continue at the same level as in the past.

QUESTIONS SUBMITTED BY CONGRESSMAN RALPH REGULA

GAO Report Concerning Energy Emergency Information

Question: A December 20, 1985 GAO Report "Energy Emergency Information Needs" concluded that while states generally believe that EIA data meets their nonemergency planning and analysis needs, if an oil shortage occurs, they would like the lag time in making data available reduced. Do you consider this a problem and are you doing anything to address this concern?

Answer: Recognizing the lag times inherent in mailing its publications to subscribers, the EIA has set up a system to make petroleum supply information available directly from the EIA computer to users, such as the States, with time-critical requirements. The system, called Electronic Publication System, makes available selected Weekly Petroleum Status Report and Petroleum Supply Monthly statistics through a telephone dial-up procedure, at no charge. The service is available throughout the year from 8 a.m. to 11 p.m. weekdays and from 10 a.m. to 6 p.m. on weekends and holidays. The weekly data are updated with the current week's statistics after 5 p.m. on Wednesday of each week (Thursday, in the event of a holiday). Data for the most current month are updated by 5 p.m. on the 24th of each month. In the event of an oil shortage, the system will continue to provide users with immediate access to important petroleum supply statistics as soon as they are approved by EIA. Further, special arrangements can be made for those States desiring additional data during an oil shortage.

Question: Your budget proposes to eliminate the State Energy Data System (SEDS). The GAO found, however, that the states considered this a very important source of data. Quoting from the GAO report, according to Energy officials in Kansas "the loss of this data would be catastrophic as they could not maintain an adequate picture of the petroleum situation or an energy emergency plan without this data." How do you respond to this?

Answer: Admittedly, SEDS data are used by the States. However, the referenced quote relates to EIA's Weekly Petroleum Status Report and the monthly Petroleum Price and Sales Volume survey, neither of which are proposed for elimination.

Question: According to the GAO report, SEDS data are used to determine allocation of funds for the Low Income Home Energy Assistance Program and the distribution of money collected for actual or alleged oil overcharge violations. If the SEDS is eliminated, how will these allocations be determined?

Answer: While SEDS data are useful for these programs, the programs also use data from EIA's primary data systems; specifically, monthly and annual petroleum product sales data for oil overcharge analysis, and residential energy consumption data for low income home energy assistance analysis and allocation. Since the SEDS methodology is published and readily available and all the primary data on which SEDS is based are scheduled to be continued, the data user could derive the necessary State-level estimates if SEDS is eliminated.

Question: How much does it cost to compile, publish and distribute the SEDS data?

Answer: For FY 1986, the cost for compiling SEDS is $95,000 and approximately 2.5 FTE. Costs incurred for publishing and distributing the State Energy Data Report, State Energy Overview, and State Energy Price and Expenditure Report are approximately $29,000. The cost is partially offset by revenues, returned directly to the Treasury, from sale of the publications estimated at approximately $7,000 per year.

Question: Your budget proposes eliminating the SEDS, the State Heating Oil Grants Program and the Financial Reporting System. Could you prioritize these, i.e. which would you eliminate first?

Answer: Of course, EIA would like to see all of these reports deleted. However, within a priority framework, EIA would first eliminate the Financial Reporting System (FRS); second, the State Heating Oil Grants Program; and third, SEDS. The reasons for these proposed eliminations are as follows. First, FRS imposes an excessive reporting burden on the 22 major energy companies that are required to provide information, and the FRS data are duplicative of some publicly available data. Second, the State Heating Oil Grants Program was created and continues to exist because of apprehensions of fuel oil price escalations and shortages. In light of declining fuel oil prices and the fact that shortages have been nonexistent for more than six years, there is no longer a priority need for this program. Third, maintaining SEDS is of lower priority than maintaining the primary data system from which SEDS data are derived.

Question: Is it accurate to assume that while industries have access to plenty of data sources, States are less likely to have alternatives to EIA data, making the SEDS data all the more important?

Answer: EIA cannot confirm or deny whether States are less likely than industry to have access to many alternative data sources. Our general impression is that States and industry have access to much of the same information. While there may be industry-specific data that are not generally publicly available, the reverse also may be true of State-collected data. Most of the sources for SEDS are data series contained in the fifteen EIA publications which were cited in the previously mentioned GAO report as used most often by States. States, as well as industries and the general public, will continue to have access to these basic data series as an alternative to SEDS.

Question: According to the GAO report, the American Petroleum Institute's (API) Weekly Statistical Bulletin provides States with petroleum data estimates that are more current than the actual data provided by EIA in its Weekly Petroleum Status Report. Since the States have identified SEDS as critical and there appears to be another, more accurate source for this information which I understand is available to anyone, would it make more sense to eliminate this report rather than the SEDS?

Answer: The EIA believes that continuation of the Weekly Petroleum Status Report has a much higher priority than continuation of the State Energy Data System. The GAO report also states that the States consider the Weekly Petroleum Status Report an important source of information, especially for energy emergency planning. The American Petroleum Institute (API) Weekly Statistical Bulletin is released only 24 hours before the Energy Information Administration's (EIA) Weekly Petroleum Status Report. The API data are not considered to be more accurate than the EIA data. Because API uses a smaller sample than EIA, and because API cuts off its processing one day earlier than EIA, a larger portion of API's published values must be estimated. The Weekly Petroleum Status Report is used as input to short-term and international forecasting to meet requests for special analyses and for monitoring industry activities in the event of an emergency. Company level data can be aggregated by facility-type, commodity, region, or any of a number of other factors to explain supply anomalies. Additionally, the weekly data are the only comprehensive data which are timely enough to be useful during an emergency. Once discontinued, the weekly system could not be reactivated quickly enough to be of use during an emergency.

Question: What is the cost of compiling, printing and distributing the Weekly Petroleum Status Report?

Answer: In FY 1987, costs for compiling the Weekly Petroleum Status Report are estimated at $1,100,000 in contract funds and 8 FTE. Printing and distribution costs are approximately $37,500 per year. These costs are partially offset by revenues, returned directly to the Treasury, estimated at $27,000 from subscription and single-issue sales.

Question: Why is API's data more accurate than EIA's?

Answer: We do not agree that API's data are more accurate than EIA's data. The GAO report, "Energy Emergency Information Needs," did not state that API's data were more accurate and we are not aware of any other information to support such a position. Indeed, there are several reasons to support a belief that EIA's data may be more accurate than API's. First, API relies heavily on the EIA weekly data to detect errors in the API estimates. Many respondents to both surveys simply forward a copy of the form they file with the EIA to API. API has changed several of their procedures, including their imports coverage, to correspond to the EIA program. Second, the EIA's system is designed so that data reported on its weekly surveys are compared to data reported on the monthly surveys submitted by the same respondents. This allows EIA to perform consistency and error checks that the API cannot make. Third, the EIA has a monthly sample control procedure to ensure that the weekly surveys provide for 90 percent sample coverage for data series published in the Weekly Petroleum Status Report. Fourth, the EIA's estimation procedure uses a ratio estimate which involves taking the ratio of data reported during the most recent month to data reported during the current week by the same respondents and then multiplies that by the sum of the weekly reports for each data series. API uses aggregate data from the EIA's Petroleum Supply Monthly to benchmark its data series. Finally, the EIA Weekly Petroleum Status Report has greater coverage because it includes end-of-week estimates, four-week averages, and a supply-demand balance. API reports only end-of-week values.

Question: Your budget justification says that while this report will be continued, follow-up quality assurance procedures will be curtailed which will affect the quality of the data. Given the fact that the data are already considered by States and industry to be inferior to API data why continue this activity?

Answer: EIA data are not considered to be inferior to the API data. The GAO study describes the EIA data as less current, not less accurate. In fact, EIA data are released only 24 hours later than the API data for the same time period. The major impact expected of decreased follow-up quality control will be a somewhat reduced capability to distinguish between data errors and supply abnormalities. EIA will continue follow-up on large discrepancies but will accept small anomalies.

Coal Data

Question: I notice from your budget justification that your coal program includes an International Coal Trade Model. Do you have any information on coal imports?

Answer: Title II of the Energy Policy and Conservation Amendments Act of 1985 (P.L. 99-58) requires the Energy Information Administration (EIA) to produce a quarterly statistical report on imports of coal into the United States. The first report was published in January 1986, as an appendix in the Quarterly Coal Report and stated that coal imports for the first three quarters of 1985 amounted to 1.5 million tons (.2 percent of production). The Act also called for the preparation of an analysis report on the potential impact of coal imports in 1995. That report is nearly completed and will be available in early April 1986.

Question: Is there any organization like API that also keeps coal data?

Answer: No. The National Coal Association obtains and distributes coal data to its membership and other interested parties. Most of these data are obtained from the Energy Information Administration (EIA), which has the only comprehensive coal data collection system in the United States. The EIA provides data on coal production, stocks, distribution, receipts, prices and consumption to the National Coal Association. We are not aware of any other industry sources of coal data.

Data Sources

Question: For the record, could you provide a list of other data sources for each of the areas, i.e., petroleum, coal, electricity, etc, in which EIA collects data?

Answer: EIA collects a broad range of energy information. In some instances, other statistical agencies and private groups may collect similar information. During the survey forms clearance process, and as part of our ongoing quality assurance activities, EIA examines this information to determine if duplication exists. In those instances where there are similar data, we determine whether the differences between the data are sufficiently significant to justify the EIA collection. This examination is an ongoing process.

A list of other energy data sources follows. The list does not account for differences in geographic coverage, number and character of respondents, definitional differences, or data collection procedures.

Data Element(s)	Alternate Source(s)
Unfilled uranium requirements	Nuclear Assurance Corporation (NAC) Colorado Nuclear Corporation (CNC) NUEXCO (formerly, Nuclear Exchange Corporation)
Uncommitted uranium available for sale	Nuclear Assurance Corporation (NAC) Colorado Nuclear Corporation (CNC) NUEXCO (formerly, Nuclear Exchange Corporation)
Nuclear capacity	Nuclear Regulatory Commission (NRC) American Nuclear Society
Gross nuclear electric generation	McGraw-Hill
Coal consumption at electric utilities	North American Electric Reliability Council (NERC)
Coal production	Mine Safety and Health Administration (MSHA) for the Department of Labor Office of Surface Mining, Department of Interior (surface and underground) Minerals Management Survey, Department of Interior (federal coal only)
Net generation of electric power	North American Electric Reliability Council (NERC) Edison Electric Institute (EEI)
Electricity sales	Edison Electric Institute (EEI)
Electric ownership and revenues for public power	American Public Power Association
Construction schedules for electric power plants	Utility Data Institute (UDI) Kidder Peabody
Electric generating capacity	American Public Power Association Kidder Peabody
Cost data for electric utilities	Utility Data Institute (UDI)
Natural gas imports and exports	Census/Customs (IM-146, EM-546)

Natural gas deliveries to consumers	American Gas Association (AGA) Gas Requirements Committee (GRC)
Natural gas withdrawals from storage, additions to storage, prices of deliveries to consumers	American Gas Association (AGA)
Motor gasoline volumes	Federal Highway Administration (FHWA) Environmental Protection Agency (EPA) Internal Revenue Service (IRS) American Petroleum Institute (API), (weekly data only)
Distillate volumes	American Petroleum Institute (API), (weekly data only)
Residual and fuel oil volumes	American Petroleum Institute (API), (weekly data only)
Wholesale prices for motor gasoline, distillate, and residual fuel oil	Bureau of Labor Statistics (Producer Price Index)
Retail prices for distillate fuel	Bureau of Labor Statistics (Consumer Price Index)
Retail prices for motor gasoline	Platt's Oil Price Handbook and Oilmanac Bureau of Labor Statistics (Consumer Price Index) Bureau of Labor Statistics (BLS) NPD (National Purchasing Data Research, Inc.) Auto Facts

ADP Budget

Question: I notice you propose a cut in your ADP budget. As primarily an information gathering and dissemination agency, isn't your computer capability a critical element of your program? How will these proposed cuts affect your ability to perform your functions?

Answer: The cut in EIA's ADP budget is largely attributable to decreases in procurement costs consistent with EIA's five year funding plan for a computer replacement effort and does not involve any change in computer capacity. The remainder of the decrease will involve delaying the replacement of some older telecommunications equipment and a relatively small reduction in funding for contractor staffing for computer facilities management. These last two reductions should have only a marginal impact on EIA's current computer capability.

Energy Conservation

Question: You conduct surveys on energy savings through conservation measures in the residential and business sectors. Could you provide for the record briefly the latest results?

Answer: The Energy Information Administration (EIA) conducts energy consumption surveys for the residential and commercial sectors which collect some data on conservation practices. Residential Energy Consumption Surveys (RECS) have been conducted annually from 1978 through 1982 and in 1984, with publications from each collection. The next RECS is planned for 1987. The commercial sector survey, Nonresidential Buildings Energy Consumption Survey (NBECS) has been conducted twice, in 1979 and 1983, with subsequent publications. The next NBECS is planned for fielding in late 1986 or early 1987.

These surveys collect data on energy consumption and expenditures as well as data on conservation practices. However, these data do not directly demonstrate the energy savings from specific conservation practices. Indeed, it is a very complicated analytical problem to try to isolate the effects of conservation measures on energy consumption from all the other factors that affect consumption for a given building. Currently we are conducting a study, resulting from a request from Senator McClure, that attempts to determine through statistical procedures the effects of various conservation measures in the residential sector.

It is more feasible to determine the effects of a conservation change when there is consumption data for a period before and after the change took place. Such data were collected in an evaluation study of the Weatherization Program conducted by EIA using the RECS procedures on a specially selected sample of homes that had participated in the Weatherization Program. The results of the study found that the average participant saved about 14 million Btu in the year after the Weatherization improvements were made. The savings represented about 9 percent of total household energy consumption and about 13 percent of space heating consumption. Average savings ranged from 18 million Btu for homes that added attic insulation and storm windows or doors to 6 million Btu for households that did not add attic insulation, but did use other conservation measures.

Analysis of Tax Proposals

Question: I notice in your Key Activities in FY 1985 you did a study of the impact of tax proposals on the energy industry. Did this study include an analysis of an oil import fee? If so, what were the conclusions?

Answer: In August 1985, the Energy Information Administration (EIA) completed a study titled, "Analysis of the Impacts of the President's Tax Proposal on Major Sectors of the Energy Industry." The study was undertaken at the request of Congressman John D. Dingell. An import fee was not analyzed in the study. On January 31, 1986, the House Committee on Energy and Commerce requested that the EIA undertake an analysis of the effects of falling oil prices and various energy tax proposals, including an import fee. This study is now in progress and is scheduled for completion in April 1986.

Administrative Costs

Question: While your program is staying relatively level in fiscal year 1987, your Policy and Management budget is up nearly $3 million. Your budget justification for this says merely that the increase is necessary to meet the administrative support requirements estimated by the Assistant Secretary for Management and Administration. That is not much of justification. Why is this function up some 29% when the EIA program is staying relatively level?

Answer: The FY 1987 budget for Policy and Management is $10.5 million. This is about $2.3 million higher than the FY 1986 budget after adjusting for inflation. This increase is mostly accounted for by an increase of about $1.4 million in General Services Administration building space charges and an approximate $.9 million increase relating to telecommunications services and the procurement of a new DOE commercial telephone system. These costs are for basic administrative services which are shared by all DOE offices.

MONDAY, MARCH 3, 1986.

ECONOMIC REGULATORY ADMINISTRATION

WITNESSES

MARSHALL A. STAUNTON, ACTING ADMINISTRATOR
CARL A. CORRALLO, SOLICITOR

Mr. MURTHA. Next we have the Economic Regulatory Administration. Without objection, Mr. Staunton's biography will appear in the record.

[The biography of Marshall A. Staunton follows:]

MARSHALL A. STAUNTON

Marshall A. Staunton has been the Acting Administrator for the Economic Regulatory Administration (ERA), U.S. Department of Energy (DOE) since October 1985. Mr. Staunton has also served ERA as the Deputy Administrator for Enforcement.

Prior to joining DOE, Mr. Staunton served as Legislation and Services Counsel for the Bechtel Group, Inc., in San Francisco, California, from 1981 to 1984. In this position, he advised senior management on legislation in U.S. and foreign jurisdictions affecting company business. Mr. Staunton had been associated with the Bechtel Group since 1974, where he held a variety of positions including, Chief Counsel for Litigation and Legislation, Chief Counsel for the Bechtel Corporation, and Bechtel Power Corporation, Counsel for Europe and North Africa, and Counsel to Alyeska Pipeline Project.

Mr. Staunton was a partner in the law firm of Johnson & Staunton in San Francisco, from 1960 to 1974, where he specialized in corporate financing, mergers, acquisitions, governmental relations, commercial and antitrust litigation, and contractor claims. From 1957 to 1960, Mr. Staunton served as Law Clerk to an Associate Justice on the California Supreme Court.

Mr. Staunton received his A.B. degree in the classics from Brown University in Providence, Rhode Island, in 1954. He received his J.D. degree from Stanford Law School in Stanford, California in 1957. Mr. Staunton is a member of the American, California and San Francisco Bar Associations.

Mr. Staunton is married and has four children.

Mr. MURTHA. Welcome, Mr. Staunton. If you will identify your colleagues for the record.

OFFICE OF THE SOLICITOR

Mr. STAUNTON. I will, sir. To my left is Mr. Carl Corrallo, who has been here before, but his title is different this year. He is here as the Solicitor of the ERA, whose responsibilities encompass the development of cases, administrative litigation and judicial litigation. That is a change.

Mr. MURTHA. It sounds like he is under-paid for his title.

Mr. STAUNTON. I assure you that is his response, too.

Mr. CORRALLO. We can submit something in writing.

Mr. STAUNTON. Reorganization has resulted in this change. I have asked him to take on this responsibility. So for the first time, all judicial activity and all administrative legal activity are under one head. That is a benefit for purposes down the line.

Mr. Murtha. If you have a statement, the entire statement will appear in the record. If you wish to summarize for us, we would appreciate it.

FISCAL YEAR 1987 BUDGET

Mr. Staunton. Yes. Our summary may be stated very briefly. We are asking for a budget this year, an appropriation of the amount of $16,850,000. For shorthand, I will call that $16.9 million. That is made up of $13.7 million attributable to our compliance program, $2.1 million for natural gas and electricity, and we are again zeroing out our fuels conversion program—more about that later—and for program administration, we are asking for $1.1 million, for a total of $16.9 million.

Of those figures which you have here, we are anticipating, because of changes in other activities, a caseload which will continue this year to about 91—excuse me, 64 cases in case development, 175 cases in administrative litigation, and 148 cases in judicial litigation, for a total of 387 remaining cases in the Economic Regulatory Administration, the total cases that we have.

With the conclusion of those cases, we would anticipate that the compliance element of our program would be eliminated. How long it will take us to complete that remains difficult to predict.

NATURAL GAS IMPORTS

With respect to our natural gas applications for import and export of natural gas, as well as electricity, that is increasing in a market effort, particularly by the Canadians whose efforts to sell gas and electricity in the United States has increased substantially.

CASELOADS

With respect to other aspects of the program, we are showing a decrease in our compliance request of approximately $600,000. That is consistent with the workload as it is being decreased simply by the resolution of cases either by court decisions, settlement, or by administrative ruling. There is a decrease in natural gas and electricity. This is again due to further efficiencies; and, as I mentioned, our fuels conversion program we are zeroing out. The administration has determined that activity should cease as of this year, and our program administration shows an increase of $459,000, and that amount is substantially made up of sums attributable to the cost of severance for the elimination of the fuels conversion personnel who would be leaving if, in fact, that aspect of the program were zeroed out.

The decrease in their case workload and the change from development of cases indicates to us that the audit portion of our program is no longer required at this time, at least not as intensely, and there is a switch from audit of cases to litigation support. A set of different skills is required there, so we see, in that area we anticipate there will be a lesser need for the audit elements, and we are forecasting some FTE decreases in that area, principally in the offices at Houston and Dallas. I think that summarizes the program as we see it.

EXXON CASE STATUS

One point of some significance for the committee, and that is we have at last resolved the case of the United States versus Exxon, and Exxon has paid into the Department of Energy $2.1 billion, slightly under that. We received that last month, on February 27th, and we are planning distribution of it this Thursday, on March 6th, to the various states. We have been working on that. Mr. Corrallo is extremely active in making arrangements for the transfer of those funds to the states. So that will take place on the 6th of March, and we anticipate that element of the program will be over with.

With that, I am ready to answer any questions you might have.

[The statement of Marshall A. Staunton follows:]

STATEMENT OF MARSHALL A. STAUNTON
ACTING ADMINISTRATOR
ECONOMIC REGULATORY ADMINISTRATION
DEPARTMENT OF ENERGY
BEFORE THE
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON INTERIOR AND RELATED AGENCIES

Mr. Chairman and members of the Committee, I appreciate the opportunity to provide this testimony in support of the funding request for the Economic Regulatory Administration in fiscal year 1987. As you know, we are an agency whose principal work of the past few years has been the completion of the federal government's enforcement of federal petroleum price and allocation regulations in effect during the period September 1973 through January 28, 1981. That work has continued even though the regulations themselves were terminated in January 1981. The agency has decreased in size and its caseload has steadily been reduced over the past few years. That trend will continue in FY 1987 and our funding request of $16,850,000 reflects that fact.

As we anticipated, thanks to the efforts of the ERA staff, the case and audit workloads continue to be reduced. The cases remaining are, inevitably, the most difficult to resolve, and frequently, involve adversarial litigation. Notwithstanding, ERA has achieved several significant settlements, including a recent one with ARCO for $315 million. With respect to ERA litigation efforts the direct judicial enforcement case against Exxon was finally resolved January 27, 1986, when the United States Supreme Court denied Exxon's petition for certiorari. As a result, Exxon paid approximately $2.1 billion to DOE to be disbursed to the states, territories and possessions of the United States. This disbursement will be made shortly.

As you can see, the Department continues to maintain its vigorous enforcement program while remaining fiscally responsible when allocating tax dollars to this effort. In furtherance of this objective, we have recently consolidated several ERA enforcement functions relating to litigation. All litigation responsibilities, including litigation support and audit work in the field, are now centralized under one office, the Office of the Solicitor. This reorganization is a continuation of the process which began a year ago to centralize litigation resources. For the first time, ERA litigation efforts, including audit support, are now supervised by a single office. This is particularly important in view of the need to increase its productivity and effectiveness while using existing resources.

Let me give you some specific figures from our budget request. We estimate that approximately 275 cases will be in judicial or administrative litigation at the beginning of FY 1987. Seventy-five attorneys will be available to support those cases. Our budget request for the Compliance program of $13,685,000 is for 170 full-time equivalent employees including $1,300,000 for a litigation support contract. This represents a decrease of $600,000 from 1986 levels.

The budget request for the non-enforcement activities will fund 26 full-time equivalent employees in the natural gas import and electricity import/export programs. This level of manpower and resources is sufficient for the projected program workload. We are not, however, requesting funding for the Fuels Conversion program. This program is required by the Fuel Use Act, which the request anticipates will be repealed during this fiscal year.

I believe that this funding request will adequately support the fulfillment of all our assigned responsibilities. I have no further prepared testimony. If you have any questions, I would be happy to answer them.

REORGANIZATION

Mr. **Murtha**. Would you please explain your latest reorganization and what it is intended to accomplish?

Mr. **Staunton**. Prior to the reorganization, we had in our office the Department of Judicial Litigation, the Administrative Litigation and Special Counsel, and the Case Development, as we call it. The Case Development has now reduced to 64 cases, which is all they have left, and we saw no longer any need to have a Director of Case Development, and, more importantly, we saw the need beginning to pick up on our litigation support, which at this juncture is extremely important to demonstrate the prosecution of our cases.

So it was determined that that should be done. We should eliminate the Office of Case Development. We did that, and the next step was how to make the arrangements for the litigation side of things, and on that we decided to make a combination or a consolidation of all litigation under one head for the purpose of being able to take attorneys who formerly were limited to just administrative litigation and use those attorneys in a far more efficient way, by allowing them to move from a case which was an administrative posture to go into the courts and follow the case through there.

The process of the case starts with the OHA, Office of Hearings and Appeals, and there is an appeal to FERC, and from there to the Federal Courts. We found that one way of efficiently using people who know about a case is a person who handles it in OHA is very efficient if he can continue that case through those three steps, and so our effort was designed to take advantage of those skills developed early on, and that was the reason for that consolidation.

We are then asking the Solicitor to develop the team necessary for broad litigation support in the prosecution of these cases. He has taken over the office that had previously done that, the Office of Case Development, and that is now being taken care of.

Mr. **Murtha**. What is the Special Counsel job now?

Mr. **Staunton**. Special Counsel is in charge of managing and supervising all settlement activity, and he sets forth those and delegates that authority to those involved.

FIELD OFFICES

Mr. **Murtha**. What is the status of your field offices?

Mr. **Staunton**. Right now we have a Dallas and Houston field office. They are concluding their audits, and we think, within the next 60 to 90 days, that will be substantially completed, and those offices will then have at this point surplus personnel or personnel with skills which are no longer necessary to the department. We anticipate they will be leaving.

FUEL USE ACT

Mr. **Murtha**. How much of your personnel decrease is because of your assumption that the Fuel Use Act will be repealed?

Mr. **Staunton**. I believe there are approximately 15 which are attributable to that number—the Fuel Use Act being repealed.

Mr. MURTHA. If it is not repealed, how many personnel are required to fulfill your function under the act?

Mr. STAUNTON. That question, Mr. Chairman, is one of the problems we have. We have experienced, as you might expect, in view of the falling fuel prices, increased activity by applicants to obtain exceptions from converting to coal and to use the other alternate fuels, and so, if you were to continue that program, our budget is $1.2 million, but we need an additional $800,000 for a total next year of $2 million, evenly, and the workload is increasing to 27 FTE's.

For example, in the first four months of this year, we have 64 exemption petitions. Last year we only had 68. So we have had a 300 percent increase in workload, and people are looking to use alternate fuels, gas and oil.

OIL OVERCHARGE COLLECTIONS

Mr. MURTHA. The oil overcharge collections. Would you review for the committee how much money has been collected on oil overcharges and how much more you expect to collect?

Mr. STAUNTON. Yes. We anticipate, Mr. Chairman, that—what we have collected up to this point is about $1.9 billion. We anticipate collecting another $6.1 billion, of which $4 billion would be attributable to crude oil.

Mr. MURTHA. What is the time of these collections?

Mr. STAUNTON. That is another good question. We are trying to accelerate that by a process of resolution of cases by settlement.

Given what we have seen and our past experience with the litigation process, if we do not settle, we certainly will continue through 1990. If we do settle, I can't say, but, for example, one of the cases we are attempting to settle or one of the group of cases this fall, are stripper wells. If we settle that case, at least 42 cases will be resolved by that.

So if you look at our figures in judicial litigation, you can see there is approximately 150 cases now, we would be down to just over 100. Of those remaining 100 cases, 68 are bankruptcies. So you can see that our caseload would be substantially reduced in those two things if you do that, and the time within which the program had to continue operation would be decreased.

OMB ESTIMATES

Mr. MURTHA. The budget document shows receipts to the Treasury of $750 million in fiscal year 1986, and $1.5 billion in fiscal year 1987 from petroleum overcharges. What is the basis of those estimates?

Mr. STAUNTON. I must take some responsibility for that, Mr. Murtha. I was asked to brief the OMB about some of the settlement activities that we are doing. The particular settlement activity which they were most concerned about was the stripper well case. I told them initially that it was planned that probably in fiscal year 1986 that we would receive, that is the Department of Energy, would receive from stripper wells as its share $500 million to $750 million, so that $750 million, I take it, is the high share. The $1.5 million is the remaining portion which I opined to the

OMB that I thought would be coming in if we collected all of the oil overcharge amounts that were due, or we allege were due.

So this represents—that $1.5 billion represents the balance of the funds that would be collected as our share of the amounts that would be collected.

Mr. **Murtha**. The table shows proposed "Legislation", another $1 billion in fiscal year 1987. What is the basis of that estimate?

Mr. **Staunton**. I discussed this with representatives of OMB. What they were thinking of, they had at one time proposed, or were planning to propose, legislation to capture a portion of the Exxon funds, which were $2.1 billion. Their share of the funds was $1 billion under the legislation which they were proposing. I take it that is where that number came from.

Mr. **Murtha**. Is that still valid?

Mr. **Staunton**. No, it is too late. The states have the money, it is gone.

EXXON CASE STATUS

Mr. **Murtha**. Let me ask you about the Exxon settlement. You mentioned, just quickly, in your summary—what is the status of the Exxon case?

Mr. **Staunton**. The Exxon case has been—the mandate has been returned from the Supreme Court, which denied certiorari to TECA, which sent down its mandate to the lower Court, and the final judgment has entered in that case. All litigation and all legal proceedings are now in on the Exxon case. We signed on Friday a satisfaction of judgment saying that Exxon had paid the full amount of its judgment in that case, so that case is now completed. Satisfaction will be filed this week with the Court, so it is finished. The only thing remaining now is the ongoing efforts by the court and by us to make the payments.

The Court did ask, in its judgment, that the states file an annual report with the Court as to what they were doing with the money. We are, that is the DOE, is required to pay out the money this week, on March 6th, in accordance with the Court order.

Mr. **Regula**. Will the chairman yield?

Mr. **Murtha**. Sure.

WARNER AMENDMENT COMPLIANCE

Mr. **Regula**. How effective do you think your supervision will be, to make sure the Courts comply with the Warner amendment?

Mr. **Staunton**. We are fairly confident about that, because of our experience with the Warner amendment before; Mr. Corrallo was in charge of doing that. We anticipate 51 jurisdictions, virtually all will comply, and that will be demonstrated by the report they filed with the Court. So we look forward to——

Mr. **Regula**. Will there be any field audits?

Mr. **Staunton**. No, we are not planning to do any at all, no, sir.

Mr. **Regula**. Will you be relying strictly on what the states file with you?

Mr. **Staunton**. That is correct.

Mr. **Regula**. Do you think that is adequate?

Mr. **Staunton**. Based on our experience with Warner, the answer to that question is yes. We only had one case, and that was I believe Iowa, I am not sure—we only had one case in which that occurred in which they claimed they could use the interest for general expenditures, and that is not what Warner says. The states have assured us, and they have signed a certificate for us. We are satisfied with that, that they will comply in fact with the Warner Act restrictions.

Mr. **Regula**. Will the use of this money by the states allow some diminution of the amount we appropriate for some of the programs? In other words, will it result in some substitution?

Mr. **Staunton**. Well, I certainly argued that in negotiations.

Mr. **Regula**. I would hope it does.

Mr. **Staunton**. They certainly expect that from us. What they expect from Congress, I can't say. That was the position I argued, because we were at the same time simultaneously negotiating——

Mr. **Murtha**. Mr. Corrallo?

WARNER AMENDMENT MONITORING

Mr. **Corrallo**. The question runs to the Warner amendment question, itself, which was incorporated by reference to the Courts. The funds the states receive as the result of the Exxon disbursement would have to be supplemental and not substitutional to any funds they had already had appropriated——

Mr. **Regula**. Some of the programs this is undoubtedly already used for are also Federally funded.

Mr. **Corrallo**. I am talking about the five Federal programs. Any restrictions imposed under the Warner language amendment have been incorporated by reference. To the extent states receive these monies that statute said the monies had to be treated as supplemental, and not supplanting appropriations that already have been made. States were precluded from shifting dollars around to do indirectly what the litigation indicated they could not do.

Mr. **Regula**. In your judgment, would that in any way preclude our unilaterally reducing the appropriation to a program?

Mr. **Corrallo**. The statute, I think is a prescription that runs against the states' statutes, not the Congress——

Mr. **Staunton**. We were doing some negotiating, and they agreed Congress was in a position to do anything they wanted and had full discretion. I would not anticipate they would expect otherwise.

Mr. **Regula**. Thank you.

OFFICE OF HEARINGS AND APPEALS

Mr. **Murtha**. All right. It is a complicated stripper settlement. Let's go through these questions step by step. To the extent these affect the Office of Hearings and Appeals, if they would also comment—why don't you come up to the table, Mr. Breznay. If you will identify yourself for the record.

Mr. **Breznay**. Yes. I am George Breznay, Director of the Office of Hearings and Appeals of the Department of Energy.

Mr. **Murtha**. It is our understanding that you are in the final negotiations with many parties in the so-called stripper well litigation. Could you please explain the overall scope of negotiations, including the main points of contention and the groups with which you are negotiating?

SCOPE OF STRIPPER WELL NEGOTIATIONS

Mr. **Staunton.** Let me kind of answer about the parties to the negotiation. The parties to the negotiation consist of the parties who are essentially before the Court in the stripper well multidistrict litigation. They consist of the Department of Energy, the states, and that is virtually all the states, the refiners, and that is about—well essentially all of the refiners are involved and driller crude producers and those claiming in stripper to have been damaged by the overcharge, by the intervenors, who are the agriculture co-ops, airlines, utilities, jobbers—who are also called wholesalers—and the retailers, by the surface transportation people, buses, taxicabs, that kind of individual, and those are essentially the parties that have appeared and are involved in settlement discussions.

SETTLEMENT BACKGROUND

Because of the number of parties involved, the settlement discussions have taken the form of a committee, that is each of the various groups are represented by a committee which appears before the other committees, and they discuss the various terms, and they go back to their principals and negotiate the terms and advise their principals of the terms which have been negotiated by the committees.

Now the essential issue in stripper, because liability was found against the parties, that is crude producers, is how should the money be divided? The Department of Energy has taken the position that all the money should be subject to congressional action. Barring that, or notwithstanding, no action is taken, it should go to the Treasury. The states have taken the position, that money should go to the states, and we are talking about maybe $1.4 billion plus another, well, maybe $400 million to $700 million, so it is a substantial amount of money.

The refiners are claiming they were damaged by as much as 40 percent of the overcharges, so they are asking for approximately 40 percent of the money. The agricultural co-ops have a position they are saying they were damaged by a certain percent, as are the airlines, utilities, jobbers, and retailers. That is the effort right now before the Court.

We stepped in, and you could see the amount of litigation that is involved, and it was obvious this was going to go on and on and on forever. So it was decided in the ERA enough was enough, and let's see whether a settlement wasn't possible. So we approached the states, first of all, and said "Would you be interested in the settlement?" And they said, "Yes," and we then contacted the other groups, and they all said "Yes," they would like to give it a try. That is what we have been doing, giving it a try.

SETTLEMENT STATUS

So now we have reached what I might say is the stage of negotiation. Did we think it was worth the effort, what did it mean in terms of our activities? It was reviewed, and it was felt it would do the one thing that up to this point had been so difficult, get the money into the hands of those people who could help those harmed by these overcharges. Because no money had gone out, at least in the crude oil area, for some time. So it was finally decided—what I am going to tell and relate to the committee now is how the negotiations resulted in the resolution of those different claims. And let's start with the refiners.

The refiners are to get approximately $300 million, which is considerably less, as you might detect, than the 40 percent they have been claiming. It amounts to a little bit around 14 percent of the total amount that we now know will be in stripper——

Mr. MURTHA. You are talking about agreed to by all the parties?

SETTLEMENT AMOUNTS

Mr. STAUNTON. Yes. It has not been approved by the DOE or anybody else, for that matter. This is what the negotiators and myself have said already that is fair. So they negotiated $300 million, and I will talk a little more about that in a moment.

The airlines, and what I would call the intervenors—airlines, utilities, agricultural co-ops and the jobbers and retailers will get 7.75 percent, which they divide among themselves, and that comes to about $203 million. And the balance will be set aside for a division between the states and the Federal Government on a 50/50 basis.

This has to do with stripper well, and it also has to do with all future crude oil funds and those funds which are presently on hand. In order to get this $300 million, which they want, the refiners had to do several things. They had to waive all rights to any further claims to any crude oil collections, and they agreed to do that.

They also had to agree to take those funds and to settle, what I am sure you folks can remember is what I will call, the entitlements case. There is no liability on the part of the Federal Government, but they must resolve the entitlements case, and they are going to do that through a system which they have made the arrangements for by doing it through a series of escrow and disbursement activities.

Under this arrangement, $260 million of their $300 million will be paid into an escrow account to be disbursed, after plans are approved, something like this, all those, all sellers of entitlements will get 100 percent of their money they would have gotten up to $10 million. Over that, they get 50 percent of their money.

A similar type of arrangement is made for the other people receiving disbursements. I am speaking of the airlines, the utilities, they will divide the funds up into jobbers and agricultural co-ops. We have estimated, for example, in the case of retailers, that of the Retailers Associations who are parties to this arrangement, that each gas station owner will get about $70,000. There are about 10,000 retail owners. It is a substantial amount of money they are going to get.

The agricultural co-ops will receive even more. That gets filtered down from a regional to a local co-op and then to the individual members. So that is the plan.

We have attempted to insure that there will be fairness in the disbursement and handling of the funds. An independent escrow agent will receive the money at such and such a bank, American Security Bank would be one of the banks in Washington which will be the escrow agent, and an independent administrator, that is independent of the lawyers involved in the litigation, will be involved in making certain that the claims are properly and fairly and impartially processed. With that, then, in future cases the states and Federal Government will divide the proceeds 50/50.

SETTLEMENT AND OHA

There is one thing that you should know, which does in fact bring in OHA, and that is in future crude oil monies which are collected, the states are very anxious, as well as OMB, to get their money as quickly as possible. So in an effort to make certain that people not involved in these settlement discussions or involved in the case will, in fact, be protected, we have set up a procedure where if we have some future crude oil collections and we do anticipate that, 20 percent of those collections will be set aside for being processed by OHA. The balance of the 80 percent will be immediately distributed to the states and the Federal Government on a 50/50 basis.

Mr. Breznay has been in consultation with this program, and he has reviewed very carefully the figure of 20 percent, and at least as of this point, he is looking at it again, the last time I discussed it with him, I thought he was satisfied.

Mr. **Murtha**. Are you satisfied?

Mr. **Breznay**. Yes. I do believe the 20 percent figure will be adequate to handle claims in the crude oil area.

SETTLEMENT TARGET DATE

Mr. **Murtha**. What is the target date for settlement?

Mr. **Staunton**. As soon as possible. What has happened now is that we have got the agreement, that is the draft which the negotiators have agreed to, and that is now being circulated to their principals, and as you might suspect, this might be difficult because of the numbers involved, we have got 50 states and all 50 states have to look at it and agree to it. We have 300 refiners, and they are meeting on March 12th in Dallas, I think, and it will be presented to them, and they will ask questions and discuss it.

The others will do a similar process. The airlines, of course, are a very carefully controlled and disciplined group, and they are hard to get an agreement from. Utilities, I think, have committed. Surface transportation people, I think, are pretty well for it, although I am not sure of that completely.

The big ones will be the retailers and the refiners. We are in the process of internally, within the department, of going through this review right now.

Mr. **Murtha**. How does this relate to the pending court case in the Federal Court case in Kansas?

Mr. **Staunton**. Assuming everybody agrees, we will take this settlement, which is agreed, and present it to the Court and ask for the Court's approval. As you might expect, the court will look at it very carefully and review it, and at that point, if it approves it, the settlement will become effective. But that Court will be asked to rule upon the adequacy and fairness of the settlement.

SETTLEMENT SCOPE

Mr. **Murtha**. Are there other crude oil cases involved in the proposed settlement other than the stripper case?

Mr. **Staunton**. Yes, there are. I can't give you all the specifics, but I remember the one called Diamond, which is involved. Diamond Shamrock. There are some other cases, but I am not entirely clear—Carl.

Mr. **Corrallo**. Diamond Shamrock is not covered by this particular agreement. This would contemplate, with the exception of certain specifics—the assumption would be all the crude oil cases that we have now or will have in the future will ultimately be resolved by this disbursement scheme. As that money came up, we would be disbursing it subject to the terms of the settlement agreement.

Mr. **Murtha**. If you will provide the specific exclusions for the record.

Mr. **Staunton**. Yes, we will.

[The information follows:]

Cases Excluded From Scope of Stripper Well Settlement

In the most recent draft, the following crude oil cases which involve DOE as a party are excluded from the scope of the settlement of the Stripper Well litigation:

(1) *Hunt* v. *DOE*, 5-101, 5-102 (Em. App.).

(2) *Diamond Shamrock* v. *Standard Oil Co.*

(3) *Exxon Corp., et al.* v. *DOE et al.* (The 341 Tract Unit of Citronelle Field), No. 81-25 MMS and 81-99 MMS (D. Del.) and OHA Case Nos. BEN-0078 et al. concerning the 341 Tract.

(4) *Getty Oil Co.*, OHA Case No. HRR-0074 and related cases.

(5) Any crude oil case in which there is a final order of the court concerning distribution of funds, including *United States* v. *Exxon*, 561 F. Supp. 816 (D.D.C. 1983), aff'd 773 F.2nd 1240 (Em. App. 1985); *cert. denied* 54 USLW 3495 (U.S. Jan. 28, 1986) Nos. 85-729, et al.).

SETTLEMENT EFFECT ON ERA WORKLOAD

Mr. **Murtha**. What the effect on workload for ERA would the settlement have?

Mr. **Staunton**. Well, it would substantially make our workload more efficient and might even lighten it, and it would expedite the system we have for processing the claims and processing our litigation activity. What we have encountered, particularly in the OHA process, is interventions by all these people I have mentioned who are intervening or trying to intervene in these cases, and they stall it. This would streamline the process, and I can get a better line on predicting how long that is going to take to get the cases through.

SETTLEMENT EFFECT ON OHA WORKLOAD

It also affects OHA's ability to make decisions. For example, it is the time line—it is about 2.5 to three years to get a case from start to finish through OHA. You can see the timing you are talking about.

Mr. **Murtha**. What is the effect on the settlement?

Mr. **Breznay**. The main effect, Mr. Chairman, would be in the remedy area. Presently, we are not doing any processing of claims in the crude oil area. The settlement would free up about $700 million in crude oil funds which are currently in escrow for a claims process, and provide a distribution in conjunction with the settlement.

In addition, we expect future crude oil money claim processes will be instituted. The amount of work to be done in the claims process is impossible to predict, but it is inevitable there will be some increase in the OHA workload.

SETTLEMENT OF ENTITLEMENTS

Mr. **Murtha**. Is it contemplated to provide funds to so-called buyers of entitlements?

Mr. **Staunton**. Yes. There would be in this arrangement.

Mr. **Murtha**. Why is that?

Mr. **Staunton**. This was part of the negotiated settlement. Remember, I mentioned a figure of $260 million being used of the $300 million for a settlement of entitlements. The remaining $40 million is to be divided among the refiners on the runs to still basis. That was a negotiation they wanted and it was part of the negotiations and it resulted in a $40 million amount. It is not in relative terms a substantial amount for any of the refiners to receive, but that was an amount that they asked for in the negotiations and it was a product of that effort.

STATUS OF ENTITLEMENTS CASE

Mr. **Murtha**. What is the status of the Court case on entitlements?

Mr. **Staunton**. The Department of Energy lost that case in the District Court. What was at issue there was whether or not the department was correct in refusing to publish the list, or clean-up list as it was called. The department maintained that it wasn't required to do so and we were taken to Court and the District Court said yes, you were, that is what the regulation said you had to do and you should do it.

The department appealed before TECA, so that case is pending. That effort to keep the settlement discussions alive, the parties agreed, the DOE and the refiners agreed to ask the Court for a stay of its hand before it rendered its decision to give us a chance to settle.

The Court granted that stay and gave us 30 days within which time we had to make a report. The 30th day is today. We have to report and tell them how we are doing. We are doing that and will do that.

I have not seen the report, but we have to do that today.

Mr. **Murtha**. Are you asking for another stay?

Mr. **Staunton**. Yes.

Mr. **Murtha**. How long?

Mr. Corrallo. We don't need to ask for another stay. The stay was granted by TECA and they have to report today as to progress.

STRIPPER WELL CASE AMOUNTS DUE

Mr. Murtha. Is it correct that some companies have not paid the amounts due in the stripper well case?

Mr. Staunton. That is correct.

Mr. Murtha. Provide, by company, information on what amounts have been collected and the remainder to be collected.

Mr. Staunton. Those amounts are being gathered.

Mr. Murtha. Just give it to us for the record.

Mr. Staunton. All right.

[The information to be furnished follows:]

STATUS OF COLLECTION IN STRIPPER WELL CASE

The most recent escrow reports indicate that, as of November 30, 1985, there is $1,082,780,414.57 in the escrow accounts under the court's jurisdiction in the Stripper Well Litigation, M.D.L. 378 (D. Kan.). However several plaintiffs failed to escrow all of the overcharges resulting from the inclusion of injection wells. Some firms improperly deducted windfall profit and/or severance taxes. Some failed to escrow for all their properties at issue or for violations prior to the issuance of the injunctions. In addition, some failed to escrow their overcharges for properties they operated; instead they only deposited the portion reflecting their interest. Moreover, many of the small producers with outstanding remedial orders did not establish escrow accounts.

Attachment A lists the plaintiffs in the Stripper Well Litigation, the amount they escrowed, the status of discovery and our audit analysis, types of known deficiencies and current estimate of deficiencies. Since we are still reviewing the time, to estimate the amount of deficiencies in all cases. In addition, we do not have all the information necessary since several plaintiffs have still failed to provide all of the information we requested in our discovery. We have filed a motion to compel them to respond and that motion is still pending. In those cases in which we have calculated the amount of additional monies owed, we have sent letters to the plaintiffs requesting that the monies be deposited in the Kansas escrow. If we are unable to reach an agreement with a plaintiff on the amount owed, we will file a motion in district court to compel the plaintiff to deposit the monies.

In addition, certain firms withdrew monies from the escrow account pursuant to dismissal orders which provided that they would make restitution if the stripper well regulation was upheld. These firms together with the amount of their overcharges and the status our negotiations with them are identified on Attachment B.

Attachment A

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Aminoil USA, Inc.	none	has complied with, discovery auditors need to inspect records made available to verify that Aminoil properly certified other properties	Entire violation amount (never sought or received a preliminary injunction so never established escrow account)	$2,014,108.36 plus interest
Anadarko Production Co.	$18,763,642.83	(1) failed to produce documents relating to civil penalties on privilege grounds (2) we have completed our initial calculation and sent a demand letter to the firm (3) we have requested information to verify its claim that the purchaser refused to pay stripper price for East Riche Unit	(1) failed to deposit for one property (2) deducted taxes	(1) $81,966.17 (if it received stripper prices for East Riche Unit) plus interest (2) $1,506,084 plus interest

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
George Anderman & Donald Kirby (interest owners in Texaco operated properties)	$176,609.52	has complied with discovery, we are still reviewing the information provided	unknown	unable to estimate at this time
ARCO	$89,487,986.42	(1) Arco failed to identify all stripper well properties with injection wells (2) we have not completed our review of the information provided for properties it did escrow	(1) deducted taxes (2) failed to escrow for crude oil taken in-kind (3) Admits it "inadvertently" failed to escrow $28,136.20 on one property	unable to estimate at this time

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Jimmie Austin d/b/a Austin Drilling	none	we have requested further information on overpayments after audit period	RO issued involving injection wells	$19,120.75 plus interest for overcharges identified in RO (also discovery refers to suspense account with first purchaser for $20,000) 1/
Braden-Zenith	$1,380,433.24	failed to provide all infomation necessary to determine correct tier for the mis-certified properties	Escrow does not include stripper overcharges identified in RO	$401,731.00 plus interest for overcharges identified in RO plus any subsequent violations
Champlin	$7,333,059.00	auditors are reviewing the information provided	unknown	unable to estimate at this time

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1/ Letters produced in discovery appear to indicate that the first purchaser (Arco) may have withheld payments to Austin in 1977. This was the remedy called for in the RO.

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Conoco	$42,572,312.54	auditors reviewing documents provided, also need to inspect records made available to verify answer to to Interrogatory 5	(1) deducted taxes	
			(2) only escrowed its interest on certain properties	unable to estimate at this time
Crystal	$1,168,616.04	failed to provide all infomation necessary to determine correct tier	(1) failed to deposit for Blossom waterflood	unable to estimate at this time
			(2) appears to have deducted taxes	
Robert C. Davis	none	failed to answer interrogatories	RO for injection well violations	$62,195.00 plus interest for overcharges in RO plus any subsequent violations

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Energy Reserves Group, Inc.	$8,249,451.56 (does not include deposit of $461,273.75 on February 21, 1986, for deficiencies due to taxes)	initally refused to answer several interrogatories, but recently agreed to provide information	(1) deducted taxes (2) failed to escrow for certain properties (3) misc. errors	unable to estimate at this time
Exxon	$23,532,452.69	(1) has complied with discovery requests, auditors have completed their review and calculated additional monies owed (2) meeting with Exxon to discuss deficiencies	(1) overcharges for some properties not escrowed (2) did not escrow for overcharges prior to filing complaint (3) deductions for oil taken in kind (4) interest for period prior to actual deposit	$101,353,860.00 including interest (as of 12/31/85)
Farmers Crude	$2,119,041.05	has recently provide supplemental information; auditors reviewing for completeness	failed to deposit portion of overcharges attributable to working interest owners	unable to estimate at this time

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Gulf Oil Corp.	$316,061,302.75	(1) has provide all information except Interrogatory 7 (civil penalties) (2) meeting with Gulf to discuss deficiencies	(1) interest on late deposits (2) failed to deposit portion attributable to other interest owners prior to 11/78 (3) failed to escrow taxes for overcharges prior to 11/78	$150,019,545.00 (with interest as of 8/85)
Hunt Oil Co.	$3,793,375.33	has complied with discovery, auditors reviewing calculation	interest for late deposits	unable to estimate at this time
I.U. International Oil & Gas Co.	none	(1) we have requested information to verify that it did not receive stripper prices after audit period (2) we are meeting with firm to discuss deficiencies	overcharges identified in RO	at least $633,833.86 plus interest for RO (interest as of 12/31/85 is $1,222,242 if DOE rates are used)

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Estate of 3/ Killingsworth	$3,563,329.60	N/A	None	None
Kirkwood Oil & Gas Co.	none	failed entirely to answer interrogatories	injection well overcharges identified in RO	$60,551.00 plus interest for overcharges identified in RO plus any subsequent overcharges
Patricia Leonard, et al (interest owners)	none	has complied with discovery, auditors are reviewing	unknown	unable to estimate at this time
Will I. Lewis Enterprise Inc.	none	has complied with discovery, auditors are reviewing	injection well overcharges identified in RO	$86,776.41 4/ plus interest for overcharges identified in RO, plus any subsequent overcharges

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3/ Killingsworth was dismissed after it deposited all injection well violations pursuant to settlement.

4/ Lewis claims it paid RO violations prior to decontrol. DOE is reviewing information provided by Lewis to verify this claim.

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Marathon Oil Co.	$40,506,817.04	has provided information, auditors reviewing for completeness and calculating deficiencies	(1) failed to escrow for violations identified in RO	(1) $9,052,588.22 plus interest for RO violations
			(2) also appear to be other properties that might be miscertified in pre-Ruling period	(2) unable to estimate other deficiencies at this time
			(3) also deducted taxes	
Mobil	$155,423,156.05	has provided information auditors reviewing for completeness and calculating deficiencies	(1) deducted taxes (2) deducted for oil taken in kind on some properties	unable to estimate at this time

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Muskegon Development	$10,402,711.72	has provided additional information, auditors are reviewing information	unknown	unable to estimate at this time
Petroleum Corp. of Texas	$9,445,012.78	(1) Supplemental information of other injection well properties has been promised but not provided (2) Auditors are reviewing information recently provided at meeting with DOE on deficiencies	interest on late payments	unable to estimate at this time
Petroleum Mgmt., Inc.	none	failed entirely to answer interrogatories	injection well overcharges identified in RO	$228,302.00 plus interest for overcharges identified in Ro plus any subsequent overcharges 5/

5/ Petroleum Mgmt. contends that it paid the first purchaser before decontrol. RO also involves Ruling 1975-12 issue

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Pioneer Operation Co., Inc.	none	failed entirely to answer interrogatories	injection well overcharges identified in RO	$52,344.00 plus interest for overcharges identified in RO plus any subsequent overcharges
Ruthven Inc.	none	failed entirely to answer interrogatories	injection well overcharges identified in RO	$90,454.00 plus interest for overcharges identified in RO
Sante Fe	$184,665.29	(1) failed to produce documents relating to civil penalties on privilege grounds. Otherwise complied with requests (2) auditors are reviewing information provided to calculate deficiencies	unknown	unable to estimate at this time

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Sierra Petroleum Co., Inc.	$221,342.32 (Treasury-escrow account, "earmarked to be distributed" pursuant to court order) (11/85) 6/	(1) has complied with discovery (2) auditors reviewing information to calculate any additional overcharges	unknown	unable to estimate at this time
Sklar-Phillips	$1,037,438.05	has provided most data; has agreed to supply the rest	discovery has revealed potential additional violation on one property	unable to estimate of this time

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6/ ERA allowed Sierra to make the installment payments; Sierra has 4 more payments to make (or about $34,167.16).

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Sohio	$227,609.77	(1) refused to provide answers to Interrogatories 3(b)& 5 (2) failed to provide all information necessary to determine tier (3) failed to produce documents relating to civil penalties on privilege grounds	only deposited for one property, OSC audit reveals other violations in complaint referred to "several properties"	unable to estimate at this time

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Stelbar	$1,166,409.50	(1) refused to provide answers Interrogatories 3(b) and 5(b) (2) failed to provided all information necessary to determine tier (3) failed to produce documents relating to civil penalties on privilege grounds	only deposited the portion reflecting its interest	unable to estimate at this time
Suburban Propane Gas Corp.	$5,728,996.38	failed to provide all information necessary to determine tier to verify that property qualified for marginal	failed to escrow for overcharges identified in RO	$451,807.74 plus interest for overcharges identified in RO, plus any subsequent overcharges

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Sun	$214,396,791.49	(1) has provided information requested (2) DOE sent letter to Sun describing deficiencies; Sun is reviewing and expects to meet with DOE to discuss deficiencies	(1) deducted taxes (2) failed to escrow overcharges for oil taken-in-kind (3) interest on late deposits	$24,194,150.08 plus interest
Texaco	$155,423,156.05	(1) has recently provided information, auditors reviewing for completeness (2) Claimed to privilege to certain documents responsive to Interrogatory 7	(1) only deposits its interest (2) deducted taxes (3) failed to escrow for early violations	unable to estimate at this time
Wood Oil Co.	none	has not answered interrogatories	overcharges covered by consent order which Wood has not complied with	$1,132,002.00 plus interest for consent order

STRIPPER WELL LITIGATION: OVERCHARGES

Plaintiff	Amount in Escrow	Status of Discovery and Audit Analysis	Types of Known Deficiencies	Current Estimate of Deficiencies
Don Wallace	none	only recently provided a response, auditors reviewing for completeness	unknown	unable to estimate at this time

Attachment B

Company	Amount of Overcharges & Interest	Status of Negotiations
Amoco	$308,448,000 (self-refined) 97,977,565.99 (refined by others) with interest (as of 1/85)	(1) Amoco placed overcharges for self-refined in DOE escrow account for distribution pursuant to subpart V. (2) Amoco placed overcharges for oil sold to others in the District Court for the Southern District of Ohio in connection with an interpleader action against DOE and 1st purchasers; if claims by 1st purchasers are dismissed, Amoco agrees to pay the monies to DOE.
Cities Service Company	$160,152,914.01 with interest (as of 8/1/85)	(1) Auditors are reviewing information provided by Cities to verify overcharges. (2) No agreement reached yet on remedy. DOE has filed motion to vacate dismissal order and modify or clarify consent order.

Company	Amount of Overcharges & Interest	Status of Negotiations
Phillips Petroleum Company	estimated $10-14 million with interest	(1) Phillips has not provided DOE with any information on amount of overcharges. (2) It has also insisted on 1st purchaser remedy (which allows it to retain about 70% of the overcharges) -- DOE moved to vacate Order of Dismissal and to require Phillips to pay overcharges into an escrow account.
Union	estimated $60 million with interest	(1) Auditors are reviewing materials provided by Union to calculate amount of overcharges. (2) Union has agreed to use same remedy as the court uses in Stripper Well

SETTLEMENT WITH COMPANIES OWING

Mr. Murtha. Are there any companies who have not paid their share of the stripper escrow account due to receive funds under the settlement?

Mr. Staunton. Yes. That would occur. It could occur.

Mr. Murtha. Were some arrangements made to withhold their portion of the settlement until funds were received?

Mr. Staunton. What has happened is, what they have agreed to do is to pay in the uncontested amounts. There are some amounts, Mr. Chairman, in there owing which they are disputing. They are saying we owe you some money but not all you say. We have agreed to have those refiners agree on the amount that is uncontested. They will be paid in and then we will review that to determine whether or not there is any dispute and what the grounds are for the dispute of whether or not they should pay in more moneys. That is the plan.

SETTLEMENT EFFECT ON OHA PROCEDURES

Mr. Murtha. Does the agreement contemplate changing the OHA procedures for amounts available for disbursement to potential claimants?

Mr. Staunton. Yes, because that was the 20 percent. Before they would have all the amounts available, now they will have 20 percent.

Mr. Breznay. I don't view that as a substantial change because I think the money is sufficient to pay claims.

Mr. Murtha. So the procedure stays the same?

Mr. Staunton. Yes. We are not varying the procedure at all. We are just leapfrogging what I call the second stage disbursements.

Mr. Murtha. So there are no second-stage disbursements?

Mr. Staunton. What would happen is—a little bit of clarification might be helpful—what we have always called it as the first stage disbursement is whether OHA incurred individual claims for the damage or harm done by the overcharges so individuals could prove there was harm to himself.

The second stage is where nobody can prove it, indirect restitution. That would be the 50 percent distribution to the states and to the Federal Government, on a 50-50 basis, and so what would happen under those conditions would be that the second stage would be predetermined by the terms of this agreement.

SETTLEMENT AND STATE USE OF FUNDS

Mr. Murtha. For what purpose could states use the funds provided?

Mr. Staunton. There are four basic programs which we are saying.

One, they could use it for the Warner Act. Two, they could use it for any Court order, any Court-ordered approved program, which they submitted to the Court. Three, there is an arrangement which we had—in one of our earlier consent orders, Chevron, where the states would substitute a program, this was, I guess, under Secretary Edwards, the states would submit a program of how they could spend the money for restitutionary purposes to the company, in this case Chevron, and to the DOE, and then DOE would either approve or—Chevron in this case would pay the money.

The last category is they could use the money for all programs which OHA has approved in the past for disbursements and use of the funds.

SETTLEMENT AND FEES AND COSTS

Mr. **Murtha**. How about administrative fees and costs and lawyers' fees? Will they be allowed?

Mr. **Staunton**. Yes, sir, up to five percent of the moneys which were proposed to the programs.

Mr. **Murtha**. What is the range or magnitude of lawyers' fees here?

Mr. **Staunton**. I guess they are all over the lot. I have not seen any.

George, do you have any——

Mr. **Breznay**. I do not have any personal knowledge of the lawyers' fees.

Mr. **Murtha**. Is there any requirement to report on the use of funds?

Mr. **Staunton**. We have not asked for any and up to this point we are not intending to ask for any.

SETTLEMENT AND MONITORING

Mr. **Murtha**. Does the department plan any monitoring effort at all?

Mr. **Corrallo**. I have to stress that this is a proposed agreement and it has not been accepted by any of the parties at this point. As it stands now, it would have a similar condition to the one imposed by Judge Flannery in the Exxon case, that is to say that the states would be reporting on an annual basis to the Court and to the Secretary of Energy indicting how they are expending the funds.

Mr. **Regula**. Mr. Chairman, will you yield?

Mr. **Murtha**. Mr. Regula.

WARNER AMENDMENT COMPLIANCE

Mr. **Regula**. I have been looking at "Inside Energy" here and they give you less than high marks on the way you have handled this in terms of accounting from the states. As they point out here, there is a GAO examination of the use of prior funds. They said they have not yet spent the funds in some cases, others held the money in interspersed accounts and treated the interest as general revenues, some misspent the funds, and if this is true, and the GAO must have some facts to back up their study, obviously that is circumvention of the Warner amendment.

How do you account for that?

Mr. **Staunton**. That is true. There are two answers to it. The GAO study was earlier on, their review of this was earlier on than ours. Since that study we have been aware of those deficiencies in the states and have notified the states that they were out of compliance with the regulations and they have corrected the efforts.

Mr. REGULA. How have they corrected? Have they put the money back in the pot?

Mr. STAUNTON. Repaid the funds or allocated the proper amount.

Mr. REGULA. Has there been a GAO follow-up report on this?

Mr. STAUNTON. Not that I know of.

Mr. CORRALLO. If I could take you back for a minute. The GAO report, which was February 14, 1984, indicated that they had done a sample of jurisdictions and the sample seemed to indicate that a number of jurisdictions were not treating the interest accrued on the moneys in the same way as the principal; that is to say, subject to the restrictions of the Warner amendment.

We conducted a survey in 1985 of all the jurisdictions——

Mr. REGULA. How did you do the survey, by sending them a questionnaire?

Mr. CORRALLO. We sent a letter indicating there were a number of areas we wanted addressed and they responded over a three-month period. On the basis of that review, we confirmed that there were jurisdictions that had, because of the ambiguity, shall we say, of the legislation, decided that interest that had accrued on moneys earned in the general Treasury accounts that they were using could be used for other purposes other than the Warner amendment.

We have communicated very precisely in the context of the Exxon case first, and specifically in the proposed stripper well agreement that interest has to be used the same as principal. So we are trying to cure that problem upfront.

There has been, I think under the stripper proposal, some increased flexibility given to states above and beyond the purposes that they could use the money for in Warner or the Exxon case and that was simply a product of the negotiators' best judgments on what was the best way to do the program.

Specifically, the interest problem, that is not going to happen; and as to the sort of collateral uses of money, we have contemplated there would be flexibility given that there wasn't before, so that problem is cured, too.

EXXON FUNDS MONITORING

Mr. REGULA. Why did you ignore the DOE task force recommendation in allowing almost no supervision, which, as I understand the task force, they said there should be some monitoring?

Mr. CORRALLO. Well, that is a little—I won't say misleading—but there was a great deal of staff work done in which I participated in reviewing over a four- or five-month period possible approaches that one could take in dispersing the Exxon moneys.

As you might imagine, when you have enough people working on it, and we had a lot of people working on it, everybody had a different view of what should and could be done. The recommendations that were made from the staff level did not, I don't think, even among the staff, ultimately reflect some of the early considerations, which were done in sort of a "wish list" kind of atmosphere if we could do anything we want, what could we do. Then, as we started to sift through them and consider the realistic restrictions that were imposed on us, we had to hone them down.

It wasn't so much ignoring what the task force—small "t," small "f"—as opposed to a task force created for this—it went through staff work and came out differently than it went in.

Mr. **Regula**. It seems to me given the pressures on states you need more than having them write a letter or send a report.

Mr. **Corrallo**. The Court has required states to show up once a year until the money is expended and report to the Court and to the Department of Energy on how the money is spent.

Mr. **Regula**. Did they come in personally with evidence or how——

Mr. **Corrallo**. The order is somewhat skeletal as to that point.

Mr. **Regula**. Then in that event, it is open to abuse if it isn't written with any precision.

Mr. **Corrallo**. What I was going to say is I suppose we will see the first report and that is probably a better time to make a judgment on this——

Mr. **Regula**. How long do they have to spend the money?

Mr. **Corrallo**. As long as it takes.

Mr. **Staunton**. There is no time limit.

Mr. **Regula**. Is there any minimum or can they spend it all in one year?

Mr. **Corrallo**. If they can absorb it, they can spend it all in one year.

Mr. **Regula**. Isn't your report going to be a little after the fact, the money will be gone?

Mr. **Corrallo**. It is not our report. It is the Court's report.

Mr. **Regula**. So in effect the Court adopted your recommendations, which were for nothing.

WARNER AMENDMENT EXPERIENCE

Mr. **Staunton**. Let me comment briefly on that. That is true, but the Court felt or we felt that the Court knew exactly how to control those funds and was in a position to do so. Our experience with the Warner Act funds showed us that the states would repay those funds so if there was a deficiency or breakdown there was a corrective mechanism which we found existed——

Mr. **Regula**. I would be willing to wager that there haven't been many repayments of abuses under the prior direction.

Mr. **Staunton**. I don't know.

Mr. **Corrallo**. As a result of our survey, we had several states that came back to us and said, "Oh, now that we see what we are supposed to do, we are going to do it."

Mr. **Regula**. You mean repay, or we will go and sin no more?

Mr. **Corrallo**. Certainly, do it no longer. It is subject to, I suppose, interpretation as to whether that commitment was retroactive or not.

Mr. **Murtha**. What kind of abuse are you talking about?

Mr. **Corrallo**. Abuse is an awfully strong word to use.

Mr. **Murtha**. Outside the guidelines?

Mr. **Corrallo**. That is better. We are working in the right direction.

Mr. **Regula**. Mr. Chairman, the outside witnesses said they used some of it for a fireplace in the governor's office.

Mr. CORRALLO. That was the Chevron moneys.

Mr. REGULA. Same thing.

Mr. CORRALLO. There were no similar restrictions on those moneys.

EXXON COURT SUPERVISION

Mr. REGULA. Well, I think, Mr. Chairman, there is less than an adequate supervision given the fact that there is $2 billion. Now, it is easy to say the Court made the decision, but the Court followed your recommendation, which in effect was to rely solely on the report from the states. In most instances, this will be after the fact and you have already said that in the prior case that they didn't make restitution as they should have. So what makes you think, if you find that these reports are deficient, that there will be any better retroactive compliance? You know, fool me once, it is your mistake, but twice, it is mine.

Mr. CORRALLO. That is an old Sicilian expression that I know well.

First of all, and I hope this is not a distinction without meaning, the Department of Energy position in the Exxon case was not to give this money to the states under any circumstances. It was to have the money go to the United States Treasury. What we have here is a court that on its own created a remedy and on its own essentially structured that remedy in a way it saw fit.

It is certainly true—and I don't mean to evade the question or suggest otherwise—it is true that we have not suggested any modifications to the terms of the order for a lot of reasons.

We think the order is okay on its face and the position is administering the order as it stands now.

Mr. REGULA. The Court is not really staffed as you are to administer this effectively, so it would seem to me that the Court probably followed your recommendation as to what should be done. So I don't believe that you can say this is the Court's order. It is really your decision as to what has been incorporated in the Court's order, and I have real reservations as to whether you made an adequate recommendation.

EXXON DECISION BACKGROUND

Mr. STAUNTON. If I might, let me just speak very briefly.

The decision of the Court was a surprise to all of the litigants, that is, it would go in accordance with the Warner Act funds. That was not anticipated because of the varying differences there. The Court issued its order and it was carefully reviewed within the department to see whether to appeal it.

At the time the order was issued, there was no comment about the review or looking at the monitoring or what the states would do if they got the money. The problem was what we should do.

It was determined by the department not to appeal, so we were then cast in the position of defending that order against the attack by Exxon, and Exxon made a series of appeals as to why that decision was wrong, among which one was the attack of the finding that they had committed any wrong at all.

Eventually, that got to the Supreme Court, but it was crucial to know that the Court said in its decision that I am doing this not following any legislative authority, but I am doing it on my jurisdiction as a Court of equity and I am furnishing the remedy alone and it is my decision and not anybody else's.

So having made that decision and having it affirmed on appeal, we were somewhat hesitant to go back in having had the Supreme Court ruling on at least a denial of certiorari to try to do anything to change it because we were afraid that others might come in and say, "See, there has been a change," and appeal that decision and therefore delay the disbursement of the money.

So we let the Court order stand as he had written it. That was just the way he wrote the order in terms of there will be an annual report to the Court. What you are suggesting, we looked at that and said, yes, that is a possibility. We thought that in a year we could correct any abuses and they know our attitude about Warner Act funds after their experience with the first $200 million that we got.

So we thought it was worth the risk rather than open it up again; we felt it was better to let it go and see what happened than to get into the business of monitoring. Your point has merit and there isn't any getting around it. The question is, is it worth it to delay the distribution of funds versus this corrective step that you are suggesting.

Mr. REGULA. Another problem is that we have no idea as to what we might do by way of the level of our own funding because we are not certain as to what is being done in each of the respective states with the funds. So we can't really coordinate what we do in appropriations with the money that is available.

EXXON FUNDS MONITORING

Mr. MURTHA. Are you saying that you have no authority to monitor the funds?

Mr. STAUNTON. No. We get an annual report, a copy of the report that goes to the Court, and we will look at that and review it.

Mr. MURTHA. That is after the fact.

Mr. STAUNTON. That is correct, as is the Court's.

Mr. CORRALLO. Although in many jurisdictions, it is not likely they are going to spend all the money they get in one year.

Mr. REGULA. You underestimate the states.

Mr. MURTHA. Do you have the authority to monitor the funds if you think it is necessary?

Mr. STAUNTON. Not at this time, we don't, Mr. Chairman.

Mr. REGULA. I think, Mr. Chairman, that they are relying on the public to bring complaints if there is an abuse in the states. In most instances, the public will not even know that this money is being distributed, therefore, I think putting enforcement in the hands of the general public in each of the 56 jurisdictions is a very poor way to administer an amount of that magnitude.

Mr. STAUNTON. We recognize the difficulty and we recognize the concern, and that was——

Mr. **Regula**. I think by your own admission you said the abuse in the prior distribution have, in fact, perhaps become known, but not remedied.

Mr. **Staunton**. My understanding, and if I am incorrect on this I will admit it, but I understand with the exception of one state, which maintained that it was permitted to use the interest as it saw fit and not follow principle, that they were protected. That is the only one in which there had been abuse.

Mr. **Murtha**. What was the point of the guidelines in the first place?

Mr. **Staunton**. You mean in the Warner——

Mr. **Murtha**. Yes.

Mr. **Corrallo**. The statute itself provided, to my recollection, only two specific restrictions beyond the five programs that were indicated. One, that it could not be used for administrative expenses; and two, the moneys had to supplement, not supplant.

The Department of Energy was flooded with questions from the states on experimentations of how once the money was in the program, how did the regulations apply. There were matching fund requirements, so in early 1983, we put out a ruling, 1983-1, that addressed specific questions that had been raised and we tried to flesh out how the states ought to use the moneys.

Mr. **Murtha**. Send us that ruling for the record.

[The information to be furnished follows:]

[¶ 16,081]

Ruling 1983-1

Questions and Answers Relating to the Applicability to the Petroleum Violation Escrow Funds of Regulations of the Energy Conservation Programs Administered by the Department of Energy to Which These Funds May be Distributed Under Section 155 of the Further Continuing Appropriations Act, Fiscal Year 1983.

On December 21, 1982, the President signed into law the Further Continuing Appropriations Act, Fiscal Year 1983, Pub.L. 97- 377 (the Act). Section 155 of the Act provides in pertinent part:

* * * *

"(b) As soon as practicable, the Secretary of Energy shall disburse designated petroleum violation escrow funds to the Governors of the States in accordance with the formula set forth in subsection (d).

(c) Amounts disbursed to the Governor of any state shall be used by the Governor as if such funds were received under one or more energy conservation programs. The Governor shall identify to the Secretary within one year after the time of disbursement the energy conservation program or programs to which the funds are or will be applied. Funds disbursed under this section shall be used to supplement, and not supplant, funds otherwise available for such programs under Federal or State law.

* * * *

(e) For purposes of this section—

* * * *

(2) The term "energy conservation programs" means—

(A) the program under part A of the Energy Conservation and Existing Buildings Act of 1976 (42 U.S.C. 6861 and following);

(B) the programs under part D of title III of the Energy Policy and Conservation Act (relating to primary and supplemental State energy conservation programs; 42 U.S.C. 6321 and following);

(C) the program under part G of title III of Energy Policy and Conservation Act (relating to energy conservation for schools and hospitals; 42 U.S.C. 6371 and following);

(D) program under the National Energy Extension Service Act (42 U.S.C. 7001 and following); and

(E) the program under the Low-Income Home Energy Assistance Act of 1981 (42 U.S.C. 8621 and following).

(3) The term "State" means each of the several States, the District of Columbia, the Commonwealth of Puerto Rico, and any territory or possession of the United States.

(4) The term "Governor," when used with respect to any State, means the Governor or the chief executive officer of that State.

* * * *

(f) No funds disbursed under this section may be used for any administrative expenses of the Department of Energy or of any State, whether incurred in connection with any energy conservation program or otherwise."

Pursuant to Section 155(b) and (d), the Secretary of Energy announced the disbursement of a total of $200,000,000 to the several States, the District of Columbia, the Commonwealth of Puerto Rico and several territories of the United States (the States) on January 31, 1983. As noted above, these funds are to be used by the States as if such funds were received under one or more of the five programs set forth in Section 155(e)(2) of the Act. Four of these programs, the Weatherization Assistance Program, 42 U.S.C. 6861 *et seq.*, the State Energy Conservation Program, 42 U.S.C. 6321 *et seq.*, the Schools and Hospitals Grant Program, 42 U.S.C. 6371 *et seq.*, and the Energy Extension Service, 42 U.S.C. 7001 *et seq.*, (the DOE programs), are administered by the DOE. The Low-Income Home Energy Assistance Program, (LIHEAP), 42 U.S.C. 8621 *et seq.* is administered by the Department of Health and Human Services (HHS). [2]

The statutory language has raised a number of questions concerning the manner in which the Section 155 funds may be used by the States.

In issuing this ruling, DOE hopes to clarify the relationship of Section 155 of the Act to the four DOE conservation programs.

Question #1: Do the regulations of the DOE energy conservation programs to which a Governor disburses Section 155 funds apply to those funds?

Answer #1: The statute and its legislative history indicate that the regulations governing each of the four DOE programs apply to the Section 155 funds, once a Governor disburses some of the funds to that program, as if the funds had been appropriated by the Federal government for that program. In addition, if there is a conflict between the provisions of Section 155 of the Act and a provision of the program regulations, the provisions of Section 155 will apply. Section 155(c) reads, in part: "Amounts disbursed to the Governor of any State shall be used by the Governor as if such funds were received under one or more energy conservation programs." In commenting on this section on the floor of the House of Representatives, Congressman Dingell, Chairman of the Committee on Energy and Commerce, stated that "the rules and regulations applicable to these programs would apply to these funds as well." 128 Cong. Rec. H10,435 (daily ed. Dec. 20, 1982). On the floor of the Senate, Senator Hatfield stated that Section 155 funds should be obligated "under the rules and regulations which govern those activities [energy conservation programs] as though the funds had been received for those programs" and that this procedure "provides fiscal accountability upon the use of money by the States." 128 Cong. Rec. S15,702- S15,703 (daily ed. Dec. 20, 1982). [3]

Question #2: May Section 155 funds be used for the administrative expenses of a State in operating one of the four DOE programs, if Federally appropriated funds are permitted to be used for such expenses under the regulations of a particular program? *Answer #2*: Under Section 155(f) of the

Act, a State may not use Section 155 funds for administrative expenses. This applies even though Federally appropriated funds are permitted to be used for such expenses under the regulations of a particular program to which the Section 155 funds are applied by the State. "Administrative expenses" are those expenses which States have historically considered to be administrative expenses under each program.

Question #3: May a subgrantee use the Section 155 funds for administrative expenses?

Answer #3: A subgrantee may not use Section 155 funds for administrative expenses. Section 155(f) provides that: "No funds disbursed under this section may be used for any administrative expenses of the Department of Energy or of any State, whether incurred in connection with any energy conservation program or otherwise." This statutory language does not appear to exclude any level of grantee from the prohibition of the expenditure of Section 155 funds for administrative expenses. The legislative history of Section confirms this reading of the statutory language by indicating a strong intention that the funds benefit only the type of people injured by the violators who contributed to the fund and that they not be used for administrative expenses by any level of recipient. 128 Cong. Rec. S15,702-S15,703 (daily ed. Dec. 20, 1982) (remarks of Sen. Hatfield) and 128 Cong. Rec. H10,434-H10,437 (daily ed. Dec. 20, 1982) (remarks of Rep. Dingell). As Congressman Dingell stated on the floor of the House of Representatives: ". . . our intent here is to benefit people, just as we would do if the money were provided directly to injured persons. Thus, we provided that *none* of the funds should be used for administrative expenses." (emphasis added) 128 Cong. Rec. H10,435 (daily ed. Dec. 20, 1982). However, both Congressman Dingell and Senator Hatfield indicated that this provision should not limit the use of funds for those direct services, such as labor costs, associated with low-income weatherization and retrofit activities.

Question #4: May a State use funds appropriated by the Federal government for the four DOE energy conservation programs to administer the Section 155 funds?

Answer #4: A State may use Federal funds appropriated for a program to administer the Section 155 funds applied to that program. However, a State may use no more appropriated funds for administrative expenses than an amount that equals the percentage of both appropriated and Section 155 program funds as limited by the relevant DOE regulations or, if no regulatory limit applies, established by the State's historic use of thse appropriated funds for administrative expenses. State expenses for administering the DOE conservation programs can be taken only from appropriated funds and not from Section 155 funds.

This result is required if effect is to be given to all the provisions of Section 155, read together. The primary goal of the legislation was the expeditious disbursement of the Section 155 funds by the States. 128 Cong. Rec. S15,114- S15,117 (daily ed. Dec. 16, 1982) (remarks of Senators Warner, Dole, and Percy). Without ready access to adequate administrative funds, States would face substantial difficulty in assuring the proper and rapid disbursement of the Section 155 funds. Nevertheless, Section 155(f) of the Act prohibits the use of Section 155 funds for administrative expenses. However, it does not prohibit the use of other appropriated funds for such expenses. Each of the programs in which Section 155 funds may be used permits appropriated funds to be used for administrative expenses. Section 155(c) provides that Section 155 funds shall be used as if such funds were received under the energy conservation program or programs designated by the respective governors. Thus, it would appear that appropriated funds may be used to administer Section 155 funds.

However, such use is subject to significant limitations also. Section 155(c) states that "funds disbursed under this section shall be used to supplement, and not supplant, funds otherwise available for such programs under Federal or State laws." Federally appropriated funds for these programs are "funds otherwise available for such programs" and are available for both administrative and direct program expenses. [8] Reading this provision of Section 155(c) with Section 155(f) (the prohibition on using Section 155 funds for administrative expenses) would seem to indicate that the legislation intended to supplement those funds being used for actual or direct program expenses, not the funds used for administrative expenses, and not to supplant funds that are available for direct program expenses. This type of supplanting could occur if all non-Section 155 funds not previously allocated for administrative expenses were used for the expenses of administering the Section 155 funds.

However, effect must also be given to the language and intent of that portion of Section 155(c) that requires the Section 155 funds to be used *as if* received under the chosen conservation program. Thus, after the funds are designated for use in that program, they are to be treated as normal appropriated funds for regulatory purposes. Hence, the effect of combining the Section 155 funds and appropriated funds is to increase the base (the total funds available for the program) against which any program limitation on the use of funds available for the program is measured. Two of the programs have a percentage of the funds available for the program which may be used for administrative expenses set by regulation. In the other two programs there is no regulatory limit; however, the States have reported their administrative expenses to the Department from which the percentage of the available funds historically used for administrative expenses can be calculated. Considering the Congressional concern with administrative expenses, and giving effect to all provisions of Section 155, these percentages should be applied to the total of the Section 155 funds plus the appropriated funds to obtain the total amount available for administrative expenses. However, because of the express prohibition of Section 155(f), funds actually used for administrative expenses must be derived only from appropriated funds, not Section 155 funds.

Specifically, regulations of the Weatherization Assistance Program and the Schools and Hospitals Grant Program limit the amount of funds available for the program which could be used for administrative expenses. Thus, when the Section 155 funds increase the amount of funds available for the program, the same limitation applies to the new total of funds available for the program. Therefore, the five percent available to the State for administration of the Schools and Hospitals Grant Program under the program regulations, 10 CFR § 455.62, and the five percent made available for administration of the Weatherization Assistance Program under that program's regulation (not more than ten percent for States and subgrantees), 10 CFR § 440.16, would in each case be five percent of the total of the Federal funds allocated to the States plus the Section 155 funds applied by the State to the program.

In addition, there are two programs for which there is no statutory or regulatory limit on administrative costs. These are the State Energy Conservation Program and the Energy Extension Service. In these programs, States may only increase their administrative budget by an amount which equals the percentage of a program's funds used in past years for administrative expenses multiplied by the total funding available for the program. This limitation is required to give effect to the provisions of Section 155(c) mandating that Section 155 funds supplement, not supplant, funds otherwise available for those programs.

Question #5: Must the Section 155 funds be expended by the States during a particular period of time?

Answer #5: Section 155 does not require a State to spend the Section 155 funds during a particular period of time. A State is also permitted to reallocate the funds from one eligible program to another, as long as the funds had not been expended. Thus, the provisions of the regulations and statute of the Schools and Hospitals Grant Program requiring DOE to reallocate among all the States funds not spent or obligated in a particular State during a particular fiscal year do not apply to the Section 155 funds.

Question #6: Do the recordkeeping, reporting, auditing, and monitoring requirements of the DOE program regulations also apply to the Section 155 funds? If so, must these funds be recorded and reported separately?

Answer #6: The monitoring, reporting, auditing, and recordkeeping requirements of the program regulations apply to these funds as if they were Federally appropriated funds. However, there is no requirement that records kept and reports made for the DOE programs have severable data on the disposition of the Section 155 funds, except that the Governor of each State must make the report required in Section 155(c) identifying the programs to which the funds were or will be applied.

Question #7: Do the States need to include provisions regarding the Section 155 funds in their new applications or amend current applications or State plans to cover the use of these funds?

Answer #7: States are required to include provisions in their new applications regarding the use of Section 155 funds or amend their current applications, State plans, or both to include the increase in program budget and production caused by the application of the Section 155 funds. New applications should be submitted in accordance with normal program procedures and OMB Circulars. Amendments to current applications and plans should be submitted at the same time as new applications. A new plan or application or an amendment to an existing plan or application is required when additional appropriated funds are allotted to a particular program. Since Section 155(c) requires the Section 155 funds be used as if such funds were received under the particular program to which they were applied, a new application or amendment is also required for Section 155 funds. However, such new applications or amendments do not need to be submitted before the Section 155 funds are used in a particular program. Congress intended the funds to be disbursed expeditiously and did not make their disbursement conditional upon receipt or amendment of an application or State plan.

A State is also required to amend its application or plan if it intends to use the funds for a purpose not provided for in the application or plan. For example, if a State wanted to apply funds disbursed to the State Energy Conservation Program to a measure not included in its State plan, it would have to amend the plan according to the procedures set forth in the program regulations before it funds the new measure. A State may also amend its current application, State plan, or both for other reasons as long as it follows the normal program procedures for making such amendments.

Question #8: Are the Civil Rights Act (42 U.S.C. 2000d), the Davis-Bacon Act (42 U.S.C. 276a), Office of Management and Budget Circulars, DOE Financial Assistance Rules, and other Federal requirements applicable to the Section 155 funds?

Answer #8: They are applicable to the extent they are applicable to Federally appropriated funds under the program regulations.

Question #9: Since grants under the Schools and Hospitals Grant Program are normally made by the DOE rather than by the States, what procedures should a Governor use if the State wants to apply some of the Section 155 funds to this program?

Answer #9: To apply these funds to the Schools and Hospitals Grant Program the State energy office should act as a coordinating agency under the program regulations and treat the funds as Federally appropriated funds. Thus, the State energy office would have the reporting, monitoring, recordkeeping, and auditing responsibilities it normally has under the program regulations when acting as a coordinating agency. The funds would be disbursed by the States to the institutions on the basis of a ranking of applications from schools and hospitals approved by DOE under the program regulations. The disbursement of the Section 155 funds from the States to the institutions and the approval of the ranking of applications for these funds by DOE would take place at the same time in the FY 1983 or later grant cycle for the program as the disbursal of Federally appropriated funds from DOE to the institutions and the ranking of applications for Federally appropriated funds by DOE.

Question #10: Must an institution provide funds to match a grant of Section 155 funds made under the Schools and Hospitals Grant Program? Must a State provide additional funds to match the Section 155 funds applied to the Energy Extension Service (EES)? May a State under the EES or an institution under the Schools and Hospitals Grant Program use the Section 155 funds to fulfill its obligation to match Federally appropriated funds?

Answer #10: An institution must provide funds to match a grant of Section 155 funds made under the Schools and Hospitals Grant Program; however, a State does not need to provide additional funds to match the Section 155 funds applied to the EES. As indicated in the legislative history of Section 155, the reason for requiring the funds to be applied to five particular programs and their regulations was to control the purpose for which the funds were to be used by the States and to provide fiscal accountability upon their use. 128 Cong. Rec. E5,327- E5,328 (daily ed. Dec. 18, 1982) (remarks of Rep. Dingell); 128 Cong. Rec. H10,434- H10,437 (daily ed. Dec. 20, 1982) (remarks of Rep. Dingell); and S15,702- S15,703 (daily ed. Dec. 20, 1982) (remarks of Sen. Hatfield). The Schools and Hospitals Grant Program matching requirement is the type of control on the use of Federally appropriated funds Congress intended to be applicable to the Section 155 funds. The language of the statute requiring a match refers to the requirement in terms of a limitation on the use of funds. 42 U.S.C. 6371e(b)(1). Moreover, to ensure that the funds are used most effectively to produce the greatest energy savings, the program emphasizes a competition among a wide variety of projects from a large number of applicants. 10 CFR Part 455. Requiring an applicant to provide half of the funds for its project increases the likelihood that the applicant is proposing the most efficient projects and providing accurate cost figures and the likelihood that the competition will insure the most efficient use of Federally appropriated funds. Accordingly, the matching requirement must apply to the Section 155 funds disbursed under the Schools and Hospitals Grant Program.

The EES matching requirement, however, is not intended to be a control on the use of Federally appropriated funds and is not intended to be applicable to the Section 155 funds. The language of the statute requiring a match for EES does not limit the use of appropriated funds but only requires the funds available to the program to be augmented by the States. Section 1007(b), Omnibus Budget Reconciliation Act of 1981, Pub.L. 97-35. Moreover, Congress has no need to control the use of EES funds similar to its need regarding the Schools and Hospitals funds because it knows how the funds will be distributed. Congress itself determined by statute who the recipients will be (the States) and how they will use the funds and determined by the appropriation process the amount of funds each applicant will receive. 42 U.S.C. 7001 *et seq.* In addition, Senator Warner, who introduced the original amendment to the Continuing Resolution which became Section 155, indicated that the States were unable to provide additional financial assistance to the public for energy purposes and that one purpose of the amendment was to provide the needed financial assistance to the States in order to enable them to provide such energy assistance. 128 Cong. Rec. S15,114- S15,116 (daily ed. Dec. 16, 1982). Nothing in the legislative history of the debates on the amendment indicates that the intention of Congress changed in this regard. A concern with a State's inability to help its citizens and an intention to aid the States in this connection would be inconsistent with requiring States to apply additional funds to match the Section 155 funds.

A State cannot under the EES program, and an institution cannot under the Schools and Hospitals Grant Program, use the Section 155 funds to fulfill its obligation to match Federally appropriated funds. Section 155 funds applied to both programs are required to be used as if they had been received under those programs. Section 155(c). Funds received under both programs cannot be used to meet matching requirements. In addition, Section 155(c) requires a State not to use Section 155 funds to supplant State funds otherwise available for energy conservation programs.

Question #11: In reporting energy savings under the State Energy Conservation Program (SECP), should a State report the savings due to the expenditure of Section 155 funds for that program?

Answer #11: The State should report energy savings due to actions taken under the SECP which were funded by the Section 155 funds in the same manner that it reports savings due to those actions funded by Federally appropriated funds.

Question #12: If a Governor applies some of the Section 155 funds to the Weatherization Assistance Program in a State where Indian tribes receive Federal funds for the program directly from the Federal government rather than from the State, should a portion of those funds designated for the Weatherization Assistance Program be disbursed to the Indian tribes?

Answer #12: In such a State, the Governor is required to do one of two things: either disburse a portion of the escrow funds in the amount calculated according to 10 CFR 440.11(b) to the tribal organization or other entity chosen by DOE under 10 CFR 440.11(d); or insure that the eligible members of Indian tribes in the State receive weatherization assistance in the same manner as other eligible individuals in the State receive such assistance.

Issued in Washington, D.C. on February 2, 1983.

—Footnotes—

[1] HHS is developing guidelines to assist States in applying the LIHEAP regulations to the Section 155 funds.

[2] The agreement on this point of two members of Congress with particular interest in and knowledge of Section 155 outweighs the general reluctance to use statements of individual legislators made during debates on a bill to ascertain the meaning of the full legislative. body. D.SAND, SUTHERLAND STATUTORY CONSTRUCTION § 48.13 (4th ed. 1973).

[3] If the language in Section 155(c) providing that Section 155 funds supplement and not supplant, funds otherwise available for the authorized programs under Federal *or State law* were interpreted to prohibit use of the "otherwise available" funds for administrative expenses, it would require a State to obtain money entirely outside of the authorized programs to administer Section 155 funds, and could require new State legislative actions before the Section 155 funds could be disbursed. This absurd result would defeat the legislation's purpose of distributing the funds as quickly as practicable.

.01 48 F.R. 6082 (February 9, 1983).

WARNER AMENDMENT FUNDS SURVEY

Mr. **Corrallo**. It was at that time that the Department formed its view, not borne of any specific language in the legislation, but based on what we thought was the best interpretation of the legislation's intent, that interest ought to follow the principle in terms of uses and restrictions. That was not part of 1983-1, but it was taken and communicated to several states.

As a result of the survey, we found there were some states who never got the word——

Mr. **Regula**. I find that hard to believe.

Mr. **Murtha**. With that much money involved.

Mr. **Regula**. Did you send them the word?

Mr. **Corrallo**. As I said, this was not part of 1983-1. There was no statewide distribution of the information.

Mr. **Regula**. It seems to me anything of that significance should be sent via bulletin to every state treasurer.

Mr. **Corrallo**. To my recollection that was not the case. In any event, the survey, in response to the survey, we got a number of letters from the state indicating that they had their own state legislative requirements, that money coming in had to be put into the general fund, there were some state requirements they couldn't get past.

Mr. **Regula**. But, Federal law always overrides state, so that is moot.

Mr. **Corrallo**. I understand both sides of the argument.

Mr. **Regula**. No question about it, if they want to take the money, they accept Federal guidelines.

Mr. **Corrallo**. This was not specifically stated in the statute or specifically included in the ruling, and their position, I think, and I don't want to take on the job of representing the states in these matters—but I think they took the view that this was an ambiguity not resolved until later.

In any event, most jurisdictions indicated in response to the survey that now that they had the word they understood and took that as the authority to make the change and in some cases there was a substantial amount of money disbursed in 1983 that had not been expended yet and was earning interest and that interest had been identified and focused in the direction of the Warner programs.

EXXON FUNDS MONITORING

Mr. **Staunton**. There is a bit of a problem here. Before the money gets allocated to one of these four programs by the states, there is, if you will, what do they do with it? There is no question on that issue that they recognize that they can't spend it for anything else and that interest must follow principle. So it is only when they allocate the money to a specific program that you have a problem.

On that issue, the department is looking at what kind of review, what kind of auditing, what kind of monitoring is required as to how they are spending money on that program. Congress needs that information also. So there is that element that they will come in.

Suppose, for example, they say this $25 million goes to weatherization. At that point, that triggers some departmental regulations as is set forth in this ruling that Carl was alluding to, 1983-1, will set that forth specifically and then you get into that auditing and monitoring program, too.

Mr. **Regula**. I am not sure, Mr. Chairman—it seems to me this thing needs more controls than are presently in existence and it would have been well to have heeded the advice of your task force in their recommendations to the Court.

Mr. **Murtha**. Under the regulations, does the department intend to do the monitoring?

Mr. **Staunton**. That is being reviewed now and under the present ruling, under the present ruling of 1983-1, the answer is yes.

Mr. **Murtha**. Well, thank you, Mr. Staunton. We will have some additional questions for the record.

[Questions and answers provided for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Manpower and Workload

Question: You are requesting a significant reduction in personnel in FY 1987. How much of that is because of declining enforcement workload?

Answer: Of the 44 FTE reduction in ERA in FY 1987, 30 are due to a decline in enforcement workload.

Question: How realistic are your workload and personnel estimates?

Answer: At this time, ERA feels that its workload and personnel estimates for FY 1987 are quite realistic.

Question: Please provide for the record a recap of what your workload projections are, and how your caseload has increased or decreased in each of the past three years.

Answer:

	Compliance Caseload at beginning of FY			
	1984	1985	1986	1987
Cases in development	352	187	91	-0-
Cases in administrative litigation	238	270	187	150
Cases in judicial litigation	290	200	150	125
	880	657	428	275

Exxon Case

Question: Of what significance is the Warner Amendment prohibition, retained in the Court order on Exxon, that the funds may not be used for administrative expenses? If legislation or regulations concerning the Federal programs for which the funds are provided allow the expenditure of funds for administrative purposes of the program, are such expenses allowed?

Answer: As a result of the District Court's incorporation by reference of the restrictions of the Warner Amendment on the use of Exxon funds, none of the Exxon funds may be used for administrative expenses, even if the underlying conservation program legislation or regulations permit such expenditures.

Stripper Well Case

Question: What was the Office of Hearings and Appeals' recommendation to the Federal District Court in Kansas regarding the Stripper Well case? Did the Department have a different recommendation?

Answer: On June 21, 1985, the Office of Hearings and Appeals (OHA) submitted to the United States District Court for the District of Kansas OHA's Report in re DOE Stripper Well Exemption Litigation, M.D.L. 378. The report contained OHA's findings of fact concerning the impact of the M.D.L. 378 overcharges. In addition, OHA submitted copies of the Department's Policy Statement concerning Restitution, which contained recommendations to the court. The Department Policy Statement was based upon the findings of fact in the OHA Report.

Other Major Cases

Question: What are the other major cases that you are litigating or negotiating and what are their status and approximate values?

Answer: The only other case of the same magnitude as Exxon and Stripper Well is the current litigation against Texaco. The alleged violation is approximately $1.5 billion and is presently before OHA. In addition, in February 1986 ERA entered into a proposed Consent Order with ARCO for $315 million. The proposed settlement will be subject to written comments from the public and a public hearing on the matter is scheduled for March 21, 1986.

Question: In litigation support in FY 1987 you have $1.3 million for contracts. What type of contract support do you retain?

Answer: The litigation support contract provides the following types of work:

A. Document Discovery - Screen document for relevance to specific case requirements, number, copy/film selected documents for retention, and establish controls to identify the source and subject of the documents.

B. Document Indexing - Index documents to identify facts pertinent to each case such as dates, personal names, corporate names and subject matter.

C. Data Base Development - Design and construct data bases to store document text, summaries and indexes. Produce reports and provide training to case support staff.

D. Document Filing - Establish and operate document centers to provide secure storage of documents. Create manual indexes as appropriate.

E. Document Analysis - Use the indexes and data bases to retrieve, analyze and process documents in response to case requirements.

F. Research - Perform legal and factual research relevant to specific case requirements.

Fuels Conversion

Question: Part of the workload in the Fuels Conversion area was the issuance of conversion orders. In testimony last year you said they would be complete in FY 1985. Were they?

Answer: Five of eleven prohibition orders outstanding in 1985 have been finalized. Six remaining outstanding orders have been held in abeyance at the order recipient's request. In January 1986, new proposed orders were issued to the City of Dover, Delaware for conversions at its McKee's Run Station.

Question: What assurance do we have that they will be complete in FY 1986 as stated in your budget?

Answer: A decision should be made before the end of FY 1986 as to the final disposition of the orders held in abeyance. The new proposed order issued this January will likely not be finalized until FY 1987.

Question: What other functions do you have under the Fuel Use Act that would continue if the Act were not repealed?

Answer: If the Fuel Use Act were not repealed, the activity would be almost exclusively exemption petition processing in addition to the outstanding prohibition orders.

Question: What is the status of legislation to repeal the Act?

Answer: The Department plans a legislative initiative in FY 1986 to achieve a comprehensive deregulation of gas and repeal of the Fuel Use Act. The Secretary has indicated that he believes a comprehensive deregulation of natural gas will ultimately be necessary to secure the full benefits of decontrol for America. A budget request of zero for Fuels Conversion is consistent with our position that the Fuel Use Act should be repealed.

MONDAY, MARCH 3, 1986.

OFFICE OF HEARINGS AND APPEALS

WITNESS

GEORGE B. BREZNAY, DIRECTOR, OFFICE OF HEARINGS AND APPEALS, DEPARTMENT OF ENERGY

Mr. MURTHA. Mr. Breznay, if you will submit your statement for the record, and we have some questions for you we would like you to answer for the record.

Mr. REGULA. I will reserve for the record also.

Mr. MURTHA. You have enough money to operate?

Mr. BREZNAY. Yes.

The fiscal year 1987 request allows us to remain basically level in staffing and I think that is a sufficient level to address the workload.

[The statement of Mr. Breznay follows:]

[Questions and answers provided for the record follow:]

STATEMENT OF GEORGE B. BREZNAY, DIRECTOR, OFFICE OF HEARINGS AND APPEALS, DEPARTMENT OF ENERGY

Mr. Chairman, members of the Committee, I appreciate the opportunity to appear before you today to discuss the operations of the Office of Hearings and Appeals.

Fiscal year 1985 once again was one of accomplishment in every program area of the Office of Hearings and Appeals. We continued our progress in the area known as Subpart V proceedings. These are proceedings in which the Office establishes a claims procedure to return to injured parties escrowed monies which have been received through Consent Orders or other enforcement actions. During FY 1985 we processed over 1,900 applications and distributed over $27.6 million in refunds. As of February 1, 1986, we have completed processing approximately 16,100 of the total of 18,635 applications for refund filed by individuals, large and small businesses in and outside of the oil industry, utilities, municipalities, housing authorities, and other government entities—virtually every segment of the public. In all, we have directed refunds to these claimants amounting to over $164.4 million.

We also devoted substantial time in FY 1985 to other important program areas. For example, we have been actively adjudicating enforcement matters, with 271 separate cases concluded during the past fiscal year. Like most enforcement matters, these cases were vigorously contested—mainly because of the large sums of money at issue—and involved complex legal and factual issues requiring detailed written opinions explaining our determinations. As a result, the resolution of these 271 cases is a significant accomplishment, underscored by the fact that these decisions are, with rare exceptions, upheld by the Federal Energy Regulatory Commission and the courts. During FY 1985 we reduced our inventory of open cases in the enforcement area by approximately 14 percent. We also decided 574 non-enforcement cases involving petitions implementing Subpart V procedures, Freedom of Information Act appeals, and other matters. This is more than twice the number of non-enforcement cases completed during FY 1984.

During FY 1986 and 1987 we expect to continue to process large numbers of refund applications, and to decide approximately 454 compliance and non-compliance cases in FY 1986 and 423 cases in FY 1987. This level of productivity will decrease our inventory of open cases at year end FY 1987 by approximately 44 percent. Our FY 1987 budget request of $5.0 million is $275,000 less than the adjusted appropriation for FY 1986. This represents a ceiling of 84 full-time equivalents, a decrease of 6 FTEs below the staffing level authorized for FY 1986. I believe that this level of staffing is sufficient in view of our present workload.

This concludes my prepared presentation. I would be happy to respond to any questions which you might have.

ADDITIONAL COMMITTEE QUESTIONS

Office of Hearings and Appeals

Workload

Question: What is the amount of funds in the escrow account from which you provide settlements or refunds?

Answer: As of February 28, 1986, there was $3,255,607,200.52 in the escrow account; however, $2,096,172,571.75 of that money is attributable to the Exxon Corporation judgment and will be distributed to the states. The amount remaining after the Exxon distribution, therefore, is $1,159,434,628.77.

Question: What will be the effect of the proposed stripper well settlement now being negotiated on your workload?

Answer: The OHA would experience a workload increase as a result of its role as Escrow Administrator for the Surface Transportation Escrow Fund, which would be established as part of the settlement agreement. In addition, the proposed settlement will enable us to begin processing crude oil refund applications in existing refund proceedings, increasing somewhat the Subpart V caseload. Many firms, however, such as refiners, resellers and some classes of end-users, will waive their rights to file applications.

Question: What will be its effect on the funds remaining in the escrow account?

Answer: The disbursement of crude oil overcharge funds from the escrow account would be accelerated by the settlement.

Question: What is the approximate amount of funds in question in enforcement cases you are adjudicating?

Answer: As of December 31, 1985, the amount of alleged overcharges in pending enforcement cases was $2,698,543,053.26. This amount does not include accrued interest liability. Nor does it reflect alleged cost violations, since cost violations may not correspond to actual overcharges.

Question: What would be the effect on these actions and your workload based on the proposed stripper well settlement?

Answer: The Stripper Well settlement would not affect the adjudication of enforcement cases pending before OHA, which in essence focuses on whether violations of the regulations occurred. It would simplify and expedite, however, the remedy stage of those proceedings.

Escrow Account

Question: Please provide for the record a review of the current status of the escrow account showing all balances received and disbursed.

Answer: A summary of the current status of the escrow account, as prepared by the Economic Regulatory Administration as of February 28, 1986, follows.

In addition, the latest computer printout prepared by the Department of Energy's Office of the Controller summarizing the receipts, disbursements, and interest earned in each subaccount within the DOE Deposit Fund Escrow Account is being provided for the Committee files.

Case Inventory

Question: Your backlog of cases appears to be decreasing considerably. What is your current backlog of enforcement cases?

Answer: The number of pending enforcement cases, including all compliance-related petitions, is 244 as of February 28, 1986.

Question: How many more do you expect to receive in FY 1987?

Answer: We expect to receive approximately 60 cases related to compliance actions initiated during FY 1987.

Question: What portion of your staff is involved in enforcement matters?

Answer: Each OHA staff member generally works on enforcement matters, as well as other activities of the Office. It is not possible to estimate accurately the amount of staff hours (and corresponding portion of OHA's staff) actually spent on each of OHA's various functions.

Procedures

Question: What affect, if any, will the proposed negotiated settlement on the stripper well case have on your procedures?

Answer: Part IV of the settlement agreement is entitled "Other Alleged Crude Oil Violations Proceedings," and it applies to pending and future enforcement and refund proceedings involving alleged crude oil violations. The agreement would modify current Department of Energy policy in this area in a number of respects. Most significantly, it would permit the Office of Hearings and Appeals to begin considering claims for refund in the crude oil pricing area. In addition, the settlement would permit claimants to use all available methods to demonstrate injury, including presenting econometric evidence and relying on the findings contained in our Report to the District Court in the Stripper Well litigation. Finally, it would partially invert the order of future crude oil Subpart V proceedings and require the Office of Hearings and Appeals to make "up-front" second-stage distributions of funds not needed for restitution to identifiable parties. These early distributions would go to the states and the Federal government on a 50-50 basis. The Office of Hearings and Appeals would generally reserve 20 percent of the funds in future crude oil Subpart V cases to cover potential first stage claims.

Question: Is that good or bad?

Answer: On balance, the settlement would enhance the Subpart V refund process because it would allow claims to be filed in the crude oil area.

OIL OVERCHARGE COLLECTIONS AND ESTIMATED FUTURE RECOVERIES AS OF FEBRUARY 28, 1986

(In Millions of Dollars)

Oil Overcharge Collections			4,007
Add Interest Earned on Escrow Account			289
Less Disbursements:			
Dollar Equivalent of Oil into SPR		(51)	
Deposits into U.S. Treasury		(114)	
Direct Payments to Purchasers		(489)	
1980 Distribution to Charities		(3)	
OHA Subpart V Claimants		(121)*	
States:			
Warner Amendment	(200)		
1980 Distribution to Missouri	(1)		
Direct Payments	(35)		
OHA Subpart V	(26)*		
		(262)	
Total Disbursements			(1,040)
Total in Escrow Account			3,256

Estimated Future Recoveries:

From Stripper Injection Well Litigation	1,200
From Estimated From Major Refiners Subject to Enforcement Proceedings	1,600
From Estimated Recoveries from Firms Other Than Major Refiners Subject to Enforcement Proceedings	1,400
Total Estimated Future Recoveries	4,200

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* NOTE: Information on Subpart V disbursements to the States was not available. Total increase in Subpart V disbursements for February, $35 million, attributed to disbursements to claimants.

MONDAY, MARCH 3, 1986.

OFFICE OF INTERNATIONAL AFFAIRS ENERGY EMERGENCIES

WITNESS

GEORGE J. BRADLEY, JR., ACTING ASSISTANT SECRETARY FOR INTERNATIONAL AFFAIRS AND ENERGY EMERGENCIES, DEPARTMENT OF ENERGY

EMERGENCY PREPAREDNESS

Mr. MURTHA. Next we have Mr. Bradley.

Mr. Bradley's biography will be submitted for the record. Your statement will appear in the record, also.

Mr. BRADLEY. Thank you, Mr. Chairman.

It is my pleasure to appear before you today in support of the President's budget proposal for fiscal year 1987 for the Office of Energy Emergencies. The 1987 budget request for the Office of Energy Emergencies is $6.04 million, a slight increase over the fiscal year 1986 adjusted appropriation.

During fiscal year 1987, we will emphasize energy security preparedness activities both internationally and domestically, participation in a variety of tests and exercises and follow-up evaluations which will allow us to assess our approach to energy emergency planning, operations and policy analysis. We will examine the impacts of actual or prospective disruptions in energy systems and alternative responses to such disruptions. We will assess national security and other critical energy needs and how best to meet those needs.

These activities will focus on the identification, analysis and systematic assessments of threats, both foreign and domestic, to our energy security. The program will maintain capability to ensure U.S. preparedness to meet our international commitments to the IEA, NATO and other obligations.

This will involve participation in the IEA Standing Committee on Emergency Questions, Allied stock drawdown studies, and NATO's civil emergency preparedness activities.

Fiscal year 1987 IEA activities will include a comprehensive analysis to support the U.S.-sponsored initiative on stocks and follow-up on lessons learned from the fifth allocation systems test, AST-5.

This concludes my summary remarks on our budget request. I will be pleased to answer any questions you may have.

[The statement of Mr. Bradley follows:]

U.S. Department of Energy
Assistant Secretary for:
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202 252-5644

BIOGRAPHY

GEORGE J. BRADLEY, JR.

George J. Bradley, Jr., is the Acting Assistant Secretary for International Affairs and Energy Emergencies, U.S. Department of Energy (DOE). Mr. Bradley holds the position of Principal Deputy Assistant Secretary for International Affairs and Energy Emergencies. As Principal Deputy, he is responsible for acting during the Assistant Secretary's absence and day-to-day management of the International Affairs and Energy Emergencies functions of the Department.

Prior to this current appointment, Mr. Bradley served as the Deputy Assistant Secretary for International Affairs. In this capacity, he was responsible for the international aspects of U.S. energy policy including analytical assessments of nuclear nonproliferation and related activities. Also, he served as Principal Deputy and Acting Assistant Secretary for International Affairs from 1982 to 1983.

Before coming to Washington, D.C., Mr. Bradley served as U.S. Department of Energy Representative and Nuclear Counselor in Brussels. In this position, he counselled high-level European energy officials and advised the U.S. Ambassador to the European Community on matters concerning American and European research, and nuclear nonproliferation matters.

Mr. Bradley, who is a 22-year career manager, previously served as Executive Director for Defense Programs in DOE; as Associate Assistant Administrator for National Security, responsible for day-to-day management of the nuclear weapons programs in the Energy Research and Development Administration (ERDA), DOE's predecessor agency; and as Director for Policy Analysis and Field Operation, ERDA, specializing in policy, programming, budget, and organization. Additional assignments included program management in DOE's Military Applications, Chicago Operations Offices and Argonne National Laboratory.

Mr. Bradley's education includes a B.S. from Morningside College in Iowa, an M.A. with honors from the University of South Dakota, and completion of basic requirements for his Ph.D. in International Relations at the University of Maryland. He is fluent in Italian.

Mr. Bradley is married, has two children, and resides in Silver Spring, Maryland.

June 1985

Statement of George J. Bradley, Jr.,
Acting Assistant Secretary for International Affairs
and Energy Emergencies
Department of Energy
Before the
Subcommittee on Interior and Related Agencies
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Mr. Chairman and members of the Subcommittee, it is my pleasure to appear before you today in support of the President's budget proposal for FY 1987 for the Office of Energy Emergencies.

The budget for the Office of Energy Emergencies is designed to support the national energy policy goal of fostering an adequate and secure supply of energy at a reasonable cost. This means sufficient energy supplies to meet our short and long-term needs without undue dependence on any insecure or single source of supply. We can ill afford to depend on any single source if interruption of that supply would jeopardize our economy or strategic defense capabilities. The energy emergency preparedness program relies on the development of emergency capabilities to identify and eliminate choke points to avoid disruptions to supply, if possible. It also works to mitigate disruptive impacts if they occur, and to respond to potential national security-related threats. The program further supports the Department's continuation of essential government functions during mobilization or war. It seeks to promote energy stability, energy security, and energy strength, and is based on the following objectives:

- Reduce the Nation's vulnerability to severe energy supply disruptions;
- Ensure adequate fuel for defense needs (including mobilization) and for fulfilling U.S. obligations in treaties and international agreements;
- Maintain the capability to anticipate and assess possible risks and disruptions to the Nation's energy supply network;
- Ensure preparedness to maintain continuity of government and the essential functions of government before, during, and after a national defense emergency.

The program is based upon a fundamental recognition that, even at this time of apparent oversupply and glutted markets, the United States will remain vulnerable to energy supply disruptions for the remainder of this decade and beyond.

FY 1986 ENERGY EMERGENCIES PROGRAM

During FY 1986, the Office of Energy Emergencies will continue activities that will assess and reduce our energy vulnerabilities, and thereby contribute to the Nation's security. We will be developing measures to prevent, prepare for, and, if necessary, respond to threats to our Nation's energy security. These activities include:

- Assessing the vulnerability of the Nation's energy supplies and resources to terrorism, sabotage, acts by hostile foreign governments, and natural disasters;
- Consolidating Departmental expertise, by fuel type, and establishing a unified system (the Energy Emergency Management System) to improve energy emergency decisionmaking and operations;
- Supporting international energy security programs including the International Energy Agency (IEA) and North Atlantic Treaty Organization (NATO) programs. This includes:
    - continued recruitment and training of the Joint Operational Staff (JOS) to fulfill functions of the NATO Wartime Oil Organization, development of plans and procedures for operation of the NATO Wartime Oil Organization-West at its wartime relocation site, and providing representation and technical support for participation in NATO civil emergency planning groups; and
    - participating in IEA follow-on activities to the AST-5 exercise, providing government representation and technical support for participation in the policy and planning activities of the IEA Standing Committee on Emergency Questions (SEQ).
- Conducting technical energy studies of national security issues, including studies in response to National Security Council classified defense energy taskings, and active support of the Federal Resource Assessment System (FRAS);
- Planning and coordination of DOE participation in Federal Emergency Management Agency civilian readiness, continuity of government, and defense-related exercises;
- Planning for implementation of the Defense Production Act to support energy requirements for mobilization or during a national defense emergency;

- Analyzing and evaluating Strategic Petroleum Reserve (SPR) drawdown and distribution options, including the use of minimum price, futures, and options. The SPR test sale after-action report also will be completed.
- Recruiting and training new Executive Manpower Reservists to ensure that an effective National Defense Executive Reserve will be available to augment DOE staff with industrial experts in a national emergency;
- Maintaining an operational capability to respond to emergencies and to carry out continuity of government responsibilities by developing special energy data bases, staff training, participating in readiness exercises, maintaining support facilities, and enhancing electronic mail service and other communications systems.

FY 1987 EMERGENCY PREPAREDNESS BUDGET REQUEST

The FY 1987 budget request for the Office of Energy Emergencies is $6.04 million, a slight increase over the FY 1986 adjusted appropriation. A summary follows:

($ in thousands)

	FY 1986 Adjusted Appropriation	FY 1987 Request
Emergency Planning	$ 555	$ 450
Emergency Operations	$ 420	$ 368
Program Direction	$ 4,775	$ 5,226
Total Emergency Preparedness Operating Expenses	$ 5,750	$ 6,044

During FY 1987, we will continue to emphasize energy security preparedness activities both internationally and domestically. A variety of energy emergency preparedness tests and exercises will allow us to assess our approach to emergency planning, operations, and policy analysis, while identifying and assessing those areas that require new programs or procedures or priority attention by the Executive and Legislative branches of Government. We will maintain in-house expertise for planning and operations as the most effective strategy for accomplishing energy emergency objectives. This approach maintains a small group of experienced government professionals who can be quickly augmented by other personnel in an energy emergency.

We will examine the impacts of actual or prospective disruptions to energy systems and alternative responses to such disruptions. We will assess national security and other critical energy needs, and how to meet these needs. We will examine alternative ways to mitigate and respond to such threats. These activities will emphasize the identification, analysis, and systematic assessment of threats--both foreign and domestic--to our energy security. This will require close coordination with the private sector and other elements within the Federal Government concerned with domestic and foreign threat assessment.

We will be responsible for developing, implementing, testing, and evaluating Departmental energy emergency preparedness policies, plans, and operations (with the exception of nuclear-related accidents). These activities, in collaboration with other Departmental elements, will include planning to increase U.S. preparedness and reduce our vulnerability, testing of emergency response capabilities, emphasizing public information programs, and providing for effective use of supplies through use of the Strategic Petroleum Reserve.

The program will involve efforts to ensure U.S. capability to meet our international commitments to the IEA, NATO, and other obligations. These efforts will include participation in the IEA Standing Committee on Emergency Questions, allied stock drawdown decisions, and NATO civil emergency preparedness activities. FY 1987 IEA activities will include a comprehensive analytical effort in support of the U.S.-sponsored initiative on stocks, and following up on lessons learned from the Fifth Allocation Systems Test (AST-5) conducted in FY 1986. During FY 1987, we also will participate in a classified NATO exercise (WINTEX-CIMEX 87).

During periodic tests and exercises, we will obtain and interpret information on expected market operations to assess the impact of events on supply availability, the U.S. economy, trade policy, and national security. Such assessments and other analyses also will be prepared for actual emergency situations which may arise, and will be disseminated to states, local governments, and the general public as part of the Federal Government's emergency response. Essential to those efforts will be the maintenance of various automated energy data systems.

The Office will develop, implement, and enhance systems for ensuring the efficient operation of the Department's emergency response policies and programs prior to and during emergencies. We will conduct assessments of the national security and defense implications of energy emergency preparedness and response policies and programs through coordination with other U. S. agencies and participation in classified national defense tests and exercises. This will involve conducting technical studies and analyses in support of National Security Council-mandated classified defense energy taskings, including NSDD-134 and NSDD-188, to reduce U.S. vulnerability to disruptions from terrorist attack, sabotage, or other emergency events. A major objective is to ensure our ability to effectively utilize scarce energy supplies. These assessments will consider use of the Defense Production Act and associated emergency preparedness projects such as the Federal Resource Assessment System (FRAS) in the event of a national defense emergency or military mobilization.

We will continue a major effort begun in FY 1986 to establish a unified management process, the Energy Emergency Management System (EEMS), to coordinate government preparation for, and response to, a wide range of potential energy emergencies. During FY 1987, activities will focus on enhancing the EEMS by developing various scenarios for which the Government should be prepared. We will conduct periodic exercises to test and refine EEMS capabilities and augment associated analytical and decision support systems.

Our experiences gained through major tests and evaluations have contributed greatly to making further improvements in the Department's energy emergency preparedness capabilities. The establishment of an Energy Emergency Policy & Evaluation function within the Energy Emergency Preparedness Program has increased our capability to quickly analyze policy issues, and provides a focus for ongoing energy emergency policy analysis and evaluation. In implementing the FY 1987 program, we will continue to emphasize the maintenance of in-house expertise for energy emergency planning and operations.

EMERGENCY PLANNING

The FY 1987 budget request for Emergency Planning is $450,000, a decrease of $105,000 from the FY 1986 adjusted appropriation. The request provides contract support needed to:

- Support emergency preparedness exercises, including a classified NATO test. Emergency management processes will be developed and refined to augment in-house staff and provide assistance in performing evaluation and follow-up activities.

- Support classified energy security tasks. These tasks are required by Presidential Directives and require major analytical efforts that involve modeling/simulation of defense energy requirements in the event of mobilization and other defense-related activities.

EMERGENCY OPERATIONS

The FY 1987 request for Emergency Operations is $368,000, a decrease of $52,000 over the FY 1986 adjusted appropriation. The request provides necessary contract support to:

- Maintain automated information services that involve specialized computer programming and data services; continue electronic mail service to communicate with States, local governments, and the private sector and commercial time-sharing services from industry sources. Our data activities support a wide range of emergency preparedness programs including the various classified continuity of government activities.

PROGRAM DIRECTION

The FY 1987 request for Program Direction is $5,226,000 and includes salaries, administrative and computer support funding. This is an increase of $451,000 over the FY 1986 adjusted appropriation and is required to support additional administrative overhead including rent and telecommunications costs. The Emergency Preparedness program reimburses the Department's Management & Administration for these specific costs. This budget request would maintain the Emergency Preparedness Program at 71 FTE.

This concludes my formal statement on our FY 1987 budget request. I will be pleased to answer any questions you may have.

STRATEGIC PETROLEUM RESERVE

Mr. Murtha. Let me ask some questions about the Strategic Petroleum Reserve.

Last year Mr. Mares, in testimony on page 225, stated that you had no role in determining the size of the Strategic Petroleum Reserve. Is that accurate?

Mr. Bradley. The Office of Energy Emergencies has a role in determining the size of the Strategic Petroleum Reserve. Clearly looking at it from the energy emergency perspective, one of the things that we assess in our monitoring and policy role is whether or not the Strategic Petroleum Reserve provides the United States with adequate insurance to reduce its vulnerability to disruption.

Mr. Murtha. Did you have any part in the decision for the moratorium?

Mr. Bradley. The answer is we were certainly part of the review process that considered this both this year and last year.

Mr. Murtha. So you were consulted?

Mr. Bradley. Yes, sir.

Mr. Murtha. What role did you have in the sale of oil from the Strategic Petroleum Reserve?

Mr. Bradley. Our office had the role of evaluating the exercises to determine whether or not from our view the system worked, and by that whether or not we would have the capability to draw down the Strategic Petroleum Reserve at specific rates for a specific period of time. Clearly that is critical from the standpoint of our determining whether or not we could respond appropriately in case of a disruption.

Mr. Murtha. So you prepared an evaluation?

Mr. Bradley. Yes, sir.

Mr. Murtha. Provide a copy of the evaluation for the committee files if you would.

[The information to be furnished follows:]

Strategic Petroleum Reserve Test Sale Report

The Office of Energy Emergencies conducted an independent review of the SPR Test Sale. A comprehensive report, including a description of the test, test sale accomplishments, and potential refinements identified as a result of the test sale, will be available in April 1986, and will be provided to the Committee of that time.

Mr. Murtha. Last year, Mr. Mares said you were looking for policy options for distributing the 10 percent of the SPR that the Secretary has authority to allocate. Have you made any progress in addressing that allocation authority?

Mr. Bradley. I am not familiar with specifically what Assistant Secretary Mares had in mind when he made that statement, but I would say that clearly from the standpoint of our office having the ability to fit that into a grand plan, a grand scheme, we would review the drawdown of the SPR both in the general sense and in the specific 10 percent sense. We do have a view in terms of how that fits into our grand scheme of things.

ENERGY EMERGENCY EXERCISES

Mr. Murtha. What types of studies have you done to assess the vulnerability of individual supply systems in this country?

Mr. **Bradley**. We have conducted quite a few studies. As you know, Mr. Murtha, we are concerned about looking at the vulnerability of the United States energy systems, be it oil, gas, coal, electric, and a series of studies have been conducted. We have identified some potential vulnerabilities, and while on the record, I would prefer not to go into specific details—but we have identified some specific vulnerable points.

For example, with respect to the electric systems, we have come up with plans and an approach in terms of how we might move to first prevent any possible problems with those systems; and secondly, if something were to occur, how do we respond to that.

Mr. **Murtha**. Did you provide any of these studies for industry, or do you give this information to industry?

Mr. **Bradley**. Yes, sir, but we are also in the process of communicating with industry at the highest levels to try to determine how, for example, some of the CEOs as well as the upper levels of Government think we might best proceed in these areas. We might move a little beyond a simple sharing of information if you will and try to determine how the Government can best help.

Mr. **Murtha**. For instance, I saw an article in the paper today talking about Pan Am being able to convert their 747s in 48 hours to cargo in case of war. They apparently did it on their own and just ran through an exercise to be able to convert in time of national emergency.

Does industry do anything like that? Do you talk back and forth to industry with exercises, or do you talk to them about vulnerability and what they can do to overcome it?

Mr. **Bradley**. The answer is yes, we do talk to industry and they participate in our exercises. The reason I chose to break down our system in terms of the various energy sectors, or fuels, is because I think we are further along on some than on some of the others, and so I think if you are talking about oil, or if you are talking about electricity, there is a lot more interaction. I think when you get off into gas and coal, we are at a different stage in the process, and so the answer is yes, in oil and electricity.

Mr. **Regula**. Mr. Chairman, will you yield?

Mr. **Murtha**. The gentleman from Ohio.

EMERGENCY PREPAREDNESS PLAN

Mr. **Regula**. Mr. Bradley, I am looking at the GAO report that went to the Subcommittee on Fossil and Synthetic Fuels. Speaking of communication, they point out in here that 10 of 14 states lack a clear understanding of the role and responsibility of Federal and state agencies during an oil shortage; 7 out of 14 desired clarification of SPR's drawdown procedures. I won't go through the rest. I am sure you are familiar with these.

Wouldn't this indicate a lack of communication with the states if there is such a thing as an emergency preparedness plan?

Mr. **Bradley**. Yes, sir, it would and I think that certainly we would not, as of several months ago, disagree with that. I think that indeed that is one of the reasons why we participated wholeheartedly, for example, in the AST-5 exercise because the purpose of that was to train.

We feel very strongly that periodically there is a turnover in Government and industry, and so the utility of these exercises is to share information and bring the various individuals in the system up to speed.

So in AST-5, for example, we had considerable interaction with the states and on our DIALCOM system, and shared information with them in terms of what we were doing and how to proceed. We would like to think at this stage that states are a lot better informed than they were four or five months ago.

Mr. **Regula**. You are saying if GAO did an update on this report that this type of response would not be likely?

Mr. **Bradley**. I would think so, sir.

Mr. **Regula**. Mr. Chairman, I would like to reserve some questions for the record.

Mr. **Murtha**. Without objection.

Mr. **Regula**. Mr. Chairman, if I might ask one further question. Are Elk Hills and Teapot Dome considered part of your strategic planning as a matter of energy preparedness?

Mr. **Bradley**. Certainly the answer, sir, is we would characterize it as all energy resources in the United States are part of our thinking in terms of energy emergency response. As to whether or not this particular facility would need to remain a Government facility, I don't think that that is something that needs to come into consideration from the energy emergency standpoint because the key is the overall United States resources. Then you can get into things like how much will we be able to bring on stream, how fast. I think that everyone would agree that when you deal with that kind of question, then Teapot Dome and Elk Hills don't really bring that much to the table. Because you are only talking about 130,000 barrels a day, I think roughly, on the high side and that is declining.

When we are talking about the Strategic Petroleum Reserve, we are talking, as you know, on the order of 2.3 million to 3.0 million barrels per day in 1987.

Mr. **Regula**. Do you feel that 500 million barrels in SPR is adequate for emergency preparedness?

Mr. **Bradley**. From an energy emergency standpoint, our judgment has been that, given the current state of the market, certainly the United States would not face additional risk by us taking a pause. From our standpoint, it is a question of vulnerability, are you increasing or decreasing risk and we don't see an increase.

Mr. **Murtha**. It took us five years to get up to 500 million barrels. So you are saying right now under present market conditions, but looking down the road five years from now under some sort of shortage in the Middle East or disruption of supply from the Middle East, not necessarily the United States, but worldwide, do you have studies that address that issue?

Mr. **Bradley**. Well, the answer to that, sir, is yes. We monitor and we look at something like that every day. As we see the market, even looking five years down the road, the idea is that the underlying trend would say that you still will probably not have a market that is so tight that you are going to face difficulty five years down the road.

I think most experts at this point in time clearly feel that you are talking some time in the mid- or late-nineties.

Mr. **Murtha**. I was reading Kissinger's book—the second volume, I believe. He was negotiating with the Shah of Iran for oil at the price of a dollar a barrel, and they reduced it. The Shah offered it to him on a very long-term basis. The United States refused it because they didn't want to be tied down to any one country. This was in 1972, so it shows you how the market can change quickly under certain circumstances.

You are saying under ideal current circumstances you shouldn't have a problem?

Mr. **Bradley**. Yes, in the current environment; and I would also add that our job is to assess that on a daily basis.

Mr. **Murtha**. I understand.

Thank you very much, Mr. Bradley. We will have some questions for you for the record.

Mr. **Murtha**. The committee will adjourn until tomorrow at 10:00 a.m.

[Questions and answers provided for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Question: Last year, you provided data on industry stocks that showed a total inventory of crude oil and products, not counting SPR, of about 993 million barrels. Of that, some 660 million barrels was necessary just to keep operations smooth. That leaves about 333 million barrels of supply (about 20 days worth) in stock. Is that a sufficient number of days?

Answer: Dividing available stocks (in excess of minimum operating inventories) by total U.S. consumption is not an accurate measure of the protection provided by commercial stocks should a supply disruption occur. The sufficiency of commercial stocks should take into account domestic production, which one would expect to continue as usual, as well as some oil imports, since it is very unlikely that all imports would be cut off.

Moreover, it is helpful to keep in mind the factors affecting industry decisions on appropriate stock levels. In the past, industry has maintained stocks sufficient to reflect product demand, refining capacity utilization, distribution system requirements, and industry's desire to reduce overall operating costs. Should product demand increase, for example, we would expect industry to take such a change into consideration in adjusting stock levels.

Question: Do you consider this number in evaluating our vulnerability to severe supply disruptions?

Answer: In its evaluation of vulnerability to oil supply disruptions, the DOE does consider the refinery stock situation and continually monitors data provided by the industry and frequently conducts its own internal analyses of private stock holdings.

Question: Shouldn't you analyze both stocks and SPR size?

Answer: When we evaluate our vulnerability to oil supply disruptions, we do take into consideration both commercial stocks and the SPR. As of January 1, 1986, commercial stocks totaled 1,023 million barrels. There were 493 million barrels in the SPR on that date, equivalent to about 120 days of 1985 U.S. net imports. Nearly 100 percent of the oil in the SPR is available for use in an emergency, and therefore should be added to available commercial inventories (after excluding minimum operating inventories) to judge the sufficiency of current U.S. stocks for emergency requirements. At these levels, we believe that current U.S. stocks (including the SPR) provide adequate protection against a possible oil supply disruption.

Question: What is the initiative you mention with regard to stocks in your statement?

Answer: The July 1984 decision of the International Energy Agency (IEA) Governing Board, which provides a framework for consultation among nations which might contribute to a coordinated stockdraw in an oil emergency, includes a provision for follow-up work by each IEA member country to further examine the technical, economic and legal issues associated with the use of stocks. These follow-up studies are termed "stocks initiatives" in the decision, and is the initiative referred to in my statement.

These studies which comprise the initiative are: minimum operating stock requirements; current and appropriate levels of stocks; the effectiveness of different methods of holding stocks; oil consumption reduction methods; short-term fuel switching potential; and economic impacts of serious oil supply disruptions. Work on the first three study topics is essentially complete and will only require some fine tuning.

Question: Have you actually done field exercises to test the vulnerability of energy supply systems in this country?

Answer: DOE has participated in a number of exercises in which the energy supply systems in this country have been threatened or disrupted. For example, the Department participated in exercises sponsored by the Federal Emergency Management Agency (FEMA) to test federal responses to earthquakes, as well as to test mobilization readiness to defense-related catastrophes. Energy is a significant component in these activities. The Department has participated in task forces with FEMA to identify critical energy facilities related to the national defense and has worked with the National Communications System to identify critical electric supply facilities associated with essential communications. Also, security reviews of the Naval Petroleum Reserves are conducted periodically, and the Government oversees mandatory emergency exercises at nuclear power plants. Additionally, the Bonneville Power Administration (BPA) has been exposed to actual attacks that have resulted in damage to that system. As a result of those attacks, BPA has prepared contingency plans that are designed to ward off such attacks.

Question: Why not?

Answer: As stated above, DOE has been involved in many exercises of this nature and is conducting studies of the vulnerability of energy supply systems in the country.

Question: Hasn't that been done for the Strategic Petroleum Reserve?

Answer: The Strategic Petroleum Reserve conducts force-on-force exercises several times a year. These exercises do address terrorist attacks and involve SPR personnel as simulated attackers and local law enforcement authorities. The SPR also conducts multi-agency exercises biennually to test the vulnerability of the system. These exercises involve elements of the Department of Defense as attackers along with Federal and local law enforcement agencies as response units. The next exercise in this series is scheduled for early next year.

Question: Does anyone do such exercises?

Answer: The Department of Defense has conducted exercises that involve attacks on strategic energy supply systems such as the Trans Alaska Pipeline. Other targets have included electric power generating plants as well as key components of major oil production and transportation systems. The Alaska State Troopers have also conducted anti-terrorist exercises against the southern terminus of the Trans Alaska Pipeline.

IEA Test

Question: Please describe the recent IEA Allocation Systems Test (AST-5) and its results.

Answer: The fifth IEA Allocation Systems Test took place from September 20 through November 16, 1985. Follow-up activities, including preparation of appraisal reports, continued through February 1986.

The objective of the test was the training of IEA Secretariat, member government and industry personnel in the essential procedures and mechanisms of the IEA Emergency [Oil] Sharing System (ESS). The test took place at IEA Headquarters in Paris, in the capitals of the 21 member countries of the IEA, and at the offices of the 40-odd Reporting Companies and their affiliates that participated in the exercise. The test simulated the operation of the ESS, which operates on a monthly cycle, as participants reacted to hypothetical disruption scenarios in each of two cycles.

Activities in the first cycle were based on supply data for the months of October through December 1984. In response to the IEA scenario, Reporting Companies and member countries completed and submitted emergency data questionnaires (Questionnaires A and Questionnaires B, respectively) in accordance with the test rules and schedule set forth in the AST-5 Test Guide. The scenario postulated an overall reduction in world supply of about 15% resulting from a 45% reduction of liftings in 14 oil producing countries, including the majority of such countries in the Middle East and North Africa, and certain countries in the Western Hemisphere.

Based on these data submissions, Allocation Rights (ARs) and Allocation Obligations (AOs) were calculated for each member country by the IEA Secretariat. In response, industry submitted voluntary supply and receive offers to "balance" IEA supplies. These voluntary offers were matched by the Industry Supply Advisory Group (ISAG) taking into account various factors including logistic constraints and oil quality requirements. After approval of matched offers by the IEA, Reporting Companies and member countries were notified of the outcome of the matching process, and sellers and buyers contacted one another to confirm and, thus, simulate implementation of these transactions. In order to provide additional training in this regard, the IEA arbitrarily designated certain transactions as "non-implemented," which required the ISAG to rematch these offers.

The second cycle, covering the months of October 1984 through January 1985, was based on a somewhat different scenario. The overall reduction of world supply in this cycle was postulated to remain at 15%, but the reduction in oil liftings from countries in the first scenario was changed to 25% (vice 45%). The test scenario also postulated a loss, for unspecified reasons, of U.S. Alaskan North Slope crude production such that there were to be no arrivals in the period November 1984 through January 1985. The IEA system procedures were followed up through the calculation of ARs and AOs, after which the exercise terminated.

The IEA Standing Group on Emergency Questions (SEQ) met on February 12, 1986 to review the outcome of the test. In general, the Secretariat, member countries and companies regarded AST-5 as a successful training exercise. It also uncovered a number of areas in connection with the operation of the ESS which will require some further work by the IEA.

A copy of the U.S. appraisal of AST-5 is being provided for the Committee files.

Question: Was this a much better test than the previous one? Why?

Answer: We believe that by identifying certain additional areas in connection with the operation of the IEA Emergency Sharing System (ESS) which will require further work by the EIA, the test made some advances beyond the experience of the previous test. In addition, we believe that by focusing AST-5 on the essential procedures and mechanics of the ESS, participants received substantial training, which is the primary purpose of these exercises. For example, the Industry Supply Advisory Group (ISAG), which performs the matching of voluntary supply and receive offers, processed 773 transactions in AST-5. Thus, the ISAG had a very rigorous exercise of its operating procedures including the use of the IEA computer-assisted voluntary offer processing system. Likewise, the drawdown and distribution of the U.S. SPR, which was simulated in a systems test for the first time in AST-5, provided U.S. Reporting Companies training in taking these volumes into account in preparing data submissions to the IEA.

Question: What organizations participated on the part of the United States?

Answer: The Department of Energy (DOE) was the primary participant on the part of the U.S government in both the planning and the execution of the test. The Department of State (DOS) provided assistance, particularly in connection with liaison with the IEA Secretariat, and the Department of Transportation assisted in planning for the simulation of Non-Reporting Company voluntary offers. Participation of U.S. industry involved 21 IEA Reporting Companies which are headquartered or which operate affiliates in the U.S. Finally, the U.S provided background information on the IEA and status reports during the test to representatives of 23 States and 24 Non-Reporting Companies.

Question: Do oil companies have anti-trust exemptions needed to participate in IEA oil sharing?

Answer: The Voluntary Agreement and Plan of Action to Implement the International Energy Program provides a limited defense to actions brought under the antitrust laws for activities engaged in by participants in the Voluntary Agreement in connection with implementing the objectives of the IEP. The Voluntary Agreement describes various classes of activities covered and the administrative procedures and record-keeping requirements which are to be followed. Eighteen U.S. oil companies which are IEA Reporting Companies participate in the Voluntary Agreement.

Organizing For An Energy Emergency

Question: Please describe how you would be organized and what you would do in an energy emergency.

Answer: Procedures for assessing the dimensions of an energy emergency, developing response options, and providing rapid and comprehensive decisionmaking support to the Secretary of Energy are encompassed in the Energy Emergency Management System (EEMS).

The system is built around four Standby Energy Emergency Response Teams for petroleum, electricity, natural gas, and coal/solid fuels. Each team is led by a senior manager, who draws the requisite expertise (e.g., analytical, data, policy, and program) from appropriate DOE offices and Federal agencies, as well as private sources. During non-crisis periods the teams monitor energy conditions, develop data and response measures, explore issues, and perform tests and training. During crisis conditions they perform emergency analyses of the situation and propose response measures for the Secretary's consideration.

A DOE Energy Emergency Working Group consisting of Secretarial Officers (or their designees) facilitates the coordination of crisis assessments and response options prior to their submission to the Secretary, and in non-crisis periods assists in program development and testing. It is chaired in a crisis by the Under Secretary, and in non-crisis situations by the Assistant Secretary for International Affairs and Energy Emergencies (AS/IE).

We anticipate the establishment of an Interagency Energy Emergency Working Group to perform similar non-crisis functions, and advise the Secretary as solicited on crisis conditions and alternative responses.

Question: Who determines when there is an energy emergency?

Answer: Based on the severity of an emergency as determined by the appropriate Standby Emergency Response Team, the Assistant Secretary/IE may recommend that the Secretary of Energy fully "activate" the EEMS process to deal with the crisis. In the absence of "full" activation, the Emergency Response Team would continue to generate current situation analyses.

Question: To whom do you provide the information?

Answer: Energy emergency analyses and proposed response options are developed by offices participating on the Energy Emergency Response Teams. Decisionmaking and other relevant crisis documents are distributed to participating members of the EEMS System. Significant response decisions are made by the Secretary. Public information programs, which are an integral part of the Department's emergency response efforts, may also be undertaken as appropriate to the crisis.

Question: What other agencies would be involved?

Answer: We anticipate utilization of senior-level support from all appropriate energy, emergency, and intelligence agencies, including: State, Treasury, DOD, NSC, CIA, FBI, and FEMA.

Question: How would you augment your organization?

Answer: As outlined above, IE crisis resources and expertise would be augmented by both DOE and other Federal offices as part of the working group process. Additionally, activation of the National Defense Executive Reserves would guarantee significant resource augmentations for dealing with a crisis. Those procedures include close collaboration prior to a crisis in the development of relevant energy emergency data and analyses, the sharing of such information with affected Offices (including the Congress), and the testing of systems and procedures.

Informing State of Emergency Plans

Question: A recent GAO report (December, 1985, page 24) indicates that the States do not feel sufficiently informed about your energy emergency plans. What is your response to each state complaint?

Answer: Over the past few years, DOE has attempted to keep states informed by:

- conveying numerous reports, testimony and other documents to the states describing Federal energy emergency preparedness programs, policies and procedures.
- participating in scheduled state meetings to exchange information and discuss DOE programs and policies, such as the periodic PADD-V states meetings.
- disseminating weekly EIA data via DIALCOM, an electronic mail system used by DOE and 49 states.

Because of significant turnover of state energy personnel and changes in state program priorities, DOE continuously look for ways to keep state personnel informed of its activities and programs. For example:

- DOE used the recent AST-5 Test to educate states on the IEA Emergency Sharing System.
- To assist states in better understanding SPR Drawdown Procedures, DOE kept states fully informed via DIALCOM on the recent SPR drawdown and sale test activities.

DOE will continue to look for ways to enhance state-level understanding of its energy emergency preparedness program and to improve Federal-state coordination and mutual assistance.

In the past, DOE has included states in relevant studies of economic impacts on low and fixed income persons during emergencies and shared this information with the states. Due to the difficulty in predicting reliably the nature of a future emergency and its impacts, we believe it is better to take appropriate action with the states at the time of the emergency.

DIALCOM is used routinely to communicate much of this information to the states. DOE is confident that the DIALCOM system would also be an effective tool to communicate information to states during an emergency because of system improvements and assured priority user access by DIALCOM. As part of its ongoing training program, DOE has a 50-state communications test under consideration.

As for the state role in energy emergencies, DOE believes states are in the best position to judge which emergency response measure should be implemented to meet particular needs so long as these measures do not interfere with interstate commerce. It would be presumptuous of the Department to tell states what their role should be. In line with this Departmental policy, DOE supports state set-asides but such programs are entirely within the purview of the individual states.

Question: Have you made any progress in defining methods to alleviate economic dislocation of low-income families in an energy emergency?

Answer: We recognize that, in an energy emergency, higher fuel prices may affect low income households to a greater degree than others in our society. There are programs already in place that provide assistance to these families during non-emergency periods. Many of these programs would adjust automatically, albeit with a lag, to provide greater benefits in the event of an energy emergency that might result in a rise in energy prices. In addition, other programs could be expanded with emergency appropriations. Because of the difficulty of predicting reliably the nature of a future emergency and its economic impacts, we believe it is better to take appropriate action during the emergency, in response to the specific circumstances existing at that time. The Administration continues to assess these issues and will be prepared to pursue appropriate alternatives should our assessment of the situation change significantly.

Support Services

Question: You request $200,000 for support services for emergency preparedness exercise preparation and conduct. For what types of firms or individuals do you contract?

Answer: We contract with firms offering energy emergency preparedness-related support services which have been subject to full competition in accordance with applicable federal procurement laws and regulations (e.g., Competition and Contracting Act). We now have two support service companies under three-year contracts which were awarded in late FY 1985. These support services involve the periodic issuance of task assignments for support in the enhancement and/or application of analytical models to examine or anticipate the consequences of hypothetical energy emergencies and the impacts of alternative response strategies. Additional support services include assistance in microcomputer system design, hardware selection and software development for our "Decision Support System," the "Energy Situation Reporting System," the "Energy Data Search System," and specialized data base information analysis and presentation systems. These types of support services are critical to the successful preparation and conduct of energy emergency preparedness exercises. Occasionally, we may procure expert/consultant services such as in the conduct of an independent outside evaluation after a major exercise (e.g., Strategic Petroleum Reserve Distribution Readiness Exercise).

Federal Resource Assistance System

Question: What is the Federal Resources Assistance System (FRAS) and what is its significance?

Answer: The purpose of FRAS is to provide the Executive Branch with a mechanism for examining mobilization preparedness needs and for acting, in concert, on any problems identified. As presently conceived, the FRAS would produce an annual evaluation of the Nation's capability to meet military mobilization requirements. Specifically, it is intended to identify potential shortfalls or bottlenecks in the supply of essential goods and services during a national security emergency, and to provide for their relief through the normal planning, programming and budgeting process.

Although presently held in abeyance pending completion of the restructuring necessitated by the breakup of the Emergency Mobilization Preparedness Board, a two-year review of the FRAS began in January 1985. It is expected that this experience will provide a basis for a final decision on institutionalizing the system.

NPC Study on SPR Use

Question: What were the findings of the FY 1985 National Petroleum Council study on Strategic Petroleum Reserve use?

Answer: In December 1984, the National Petroleum Council prepared A Report on the Capability to Distribute SPR Oil. The NPC's major finding concerning SPR use was:

- Current SPR sales policies and environmental restrictions would limit the timely distribution and use of SPR oil in an emergency.

The NPC made the following recommendations with respect to this finding:

- The SPR Drawdown Plan Amendment No. 4 be modified from an open buyer universe to a more restricted list of purchasers.
- The damage provisions of the current Standard Sales Provisions (SSP's) should be revised to more nearly balance the responsibilities and liabilities of the purchaser and DOE.

- Procedures to expeditiously process necessary environmental waivers should be established at the appropriate federal, state, and local levels. In the event of a disruption, variances may be needed for product sulfur specifications and/or facility emissions.

Question: Please provide the Committee a copy for its files.

A copy of the FY 85 National Petroleum Council's Report is being provided to the Committee.

Question: Please provide a listing of contracts you anticipate in FY 1985, FY 1986, and FY 1987.

	FY 1985	FY 1986	FY 1987
	($ in thousands)		
Emergency Planning Contract Support			
Support services for emergency preparedness tests/exercises, development of emergency management processes, test design, procedure development, situation analysis.	$ 200	$ 200	$ 200
Support for classified energy security tasks including modeling, simulation, analysis of technical issues.	300	355	250
TOTAL EMERGENCY PLANNING	$ 500	$ 555	$ 450
Emergency Operations Contract Support			
ADP support services provided by EIA, including equipment support, data analytical support, and special programming assistance.	$ 513	$ 280	$ 213
Energy data base contractor support, time-sharing services, electronic mail.	253	140	155
TOTAL EMERGENCY OPERATIONS	$ 766	$ 420	$ 368

QUESTIONS SUBMITTED BY CONGRESSMAN RALPH REGULA

California OCS Moratorium

Question: According to your budget the Emergency Preparedness Program supports the goal of an adequate and secure supply of energy in the United States at reasonable costs. Along this line have you done any analysis about what the impact on our energy and national security would be of a continued moratorium on leasing off the California coast?

Answer: This Administration is committed to fulfilling one of the most important components of this country's energy agenda, that is, the timely development of the Nation's oil and gas resources, without compromising environmental quality. Outer Continental Shelf (OCS) production has been an important source of our energy supplies in recent years, and has the potential to contribute substantially to our future needs. Federal OCS lands currently account for about 10 percent of the total proved U.S. oil reserves and 17 percent of the total proved natural gas reserves.

Continuing moratoriums on leasing Federal OCS lands is inconsistent with the Administration's energy policy, and accordingly, the Administration is encouraged by the recent action of the Congress in allowing the leasing moratorium off California to expire.

With respect to the energy security impacts of a moratorium, the Annual Energy Outlook 1985, published by the Energy Information Administration, projects a continuing decline in domestic oil production if no new reserves are found. Therefore, imports of crude oil and petroleum products would have to increase in order to meet projected increased demand for petroleum. Dependence on oil imports does not in itself cause this country to be less secure, because there are many other factors affecting our vulnerability to oil supply disruptions (e.g., excess worldwide production capacity, secure sources of supply, relative dependence on oil as an energy resource, etc.). However, because nearly 60 percent of the world's proved reserves of oil are in the Middle East, it is expected that our Nation will depend on those countries as a source of some imports for many years to come.

Consequently, whatever additional reserves of oil can be found in the United States, both onshore as well as offshore, will provide increased protection against any potential supply disruptions.

Emergency Preparedness Planning

Question: Some states believe DOE should develop an emergency preparedness document that details the policies, procedures, and responsibilities of the federal government during an oil disruption. How do you feel about this?

Answer: The issue raised by this question may not be whether DOE should produce a particular document, but instead how DOE can help the states become better informed about federal energy emergency preparedness policies.

Over the past few years, DOE has developed and conveyed numerous reports, policy statements, and other documents to the states describing federal energy emergency preparedness policies, plans and procedures, such as the National Energy Policy Plans, DOE's Annual Report, major speeches, and testimony. DOE has involved the states as participants and observers in key emergency preparedness exercises, such as AST-4 and AST-5, where the government's process for dealing with energy emergencies was not merely documented, but demonstrated. The states also were kept informed of activities during the recent test sale of crude oil from the Strategic Petroleum Reserve.

Recognizing changes in many state energy offices in the last few years, e.g., turnover of state energy personnel, reduced staffing levels, dismantling of state energy offices, and movement of energy emergency functions to other state agencies, we will continue to provide information on a regular basis.

Public Information

Question: How do you respond to the following allegations of the states?

> "DOE failed to provide federal policy directions, likely actions and procedures, or any guidelines which the states could use in an effort to plan for a petroleum product or crude oil shortage." Texas
>
> "Aside from a series of 'trust us it will work' assurances, the administration's proposed response to an oil crisis, at best, is vague." New York

Answer: The issues raised by New York and Texas officials are the same as described in the previous question. The Department intends to continue its policy of keeping states informed on its energy emergency preparedness programs by regularly disseminating reports, testimony, and other documents to state energy offices. In addition, DOE will continue to examine ways to explain its policies and programs to states and to improve Federal-state coordination, communication and mutual assistance.

Question: Your budget justification cites the electronic mail system as an important part of your capabilities to meet public information objectives in emergency and non-emergency situations. States appear to have concerns about the effectiveness of the system in the event of an emergency and recommend a test. Have you tested the system or do you intend to test the system?

Answer: The Department of Energy (DOE) tested the DIALCOM system in AST-4 with the 50 states. As a result of that test, DOE entered into discussions with DIALCOM representatives to improve system reliability (e.g., priority use) and to contract for system enhancements (e.g., electronic publishing) to assure its effectiveness during an emergency. In AST-5, DIALCOM gave priority use and DOE access to a sole computer system to assure reliability throughout the test. As part of DOE's ongoing training program, particularly in light of significant turnover in state energy office personnel, the Department has a 50-state communications test under consideration.

SPR Moratorium

Question: Your budget mentions the Strategic Petroleum Reserve several times. What would be the impact on our emergency readiness of the continued moratorium on SPR construction or fill?

Answer: We believe that the protection provided by a 500 million barrel SPR is fully adequate to protect the U.S. economy against any serious petroleum supply disruptions in the foreseeable future. At its current level, the SPR represents substantial protection against a disruption in the supply of foreign crude oil, equivalent to approximately 120 days of current net U.S. oil imports. Moreover, the current level of protection, measured in equivalent days of net imports, represents approximately the same expected from a 750 million barrel reserve when it was originally approved. A 750 million barrel reserve remains our goal, and we expect to evaluate the moratorium decision based on our continuing, careful review of the oil market and federal fiscal conditions.

Program Direction

Question: While your overall program budget is relatively level your request for program direction is up. Why is this?

Answer: The FY 1987 request for Program Direction is $5,226,000, an increase of $451,000 over the FY 1986 request. These increases are required to fund additional costs in administrative overhead (rent, communications and inflationary adjustments associated with normal supplies and logistical services which are managed by the Department centrally.) Beginning in FY 1987, we are also required to budget for computer support (usage charges) funding per OMB Circular A-121.

Monday, March 10, 1986.

STRATEGIC PETROLEUM RESERVE NAVAL PETROLEUM AND OIL SHALE RESERVES

WITNESSES

DONALD L. BAUER, ACTING ASSISTANT SECRETARY FOR FOSSIL ENERGY

RICHARD D. FURIGA, DEPUTY ASSISTANT SECRETARY FOR PETROLEUM RESERVES

CAPT. WILLIAM W. RUMBOLD, USN, DIRECTOR, NAVAL PETROLEUM AND OIL SHALE RESERVES

J. RICHARD BERMAN, DEPUTY FEDERAL INSPECTOR FOR THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

Mr. Yates. Mr. Reporter, show the hearing as coming to order. This is the hearing for fiscal year 1987 on the budget for the Strategic Petroleum Reserve, the Naval Petroleum Oil Shale Reserves, and the Alaskan Gas Pipeline. Appearing in support of that budget, or against it, we haven't heard yet, is Mr. Donald Bauer, Acting Assistant Secretary for Fossil Energy, and he is accompanied by Mr. Furiga, Deputy Assistant Secretary, and Mr. Berman.

All right, the biographies of Mr. Bauer and Mr. Furiga will be made part of the record, as well as Capt. Rumbold's and Mr. Berman's. Mr. Bauer's statement may go into the record at this point.

[The biographies and the statement of Donald L. Bauer follow:]

U.S. Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202/252-5644

BIOGRAPHY

DONALD L. BAUER

Donald L. Bauer is the Department of Energy's Acting Assistant Secretary for Fossil Energy, a position he assumed on June 3, 1985. His responsibilities include management of coal, oil, and unconventional gas research and development programs as well as the Naval Petroleum and Oil Shale Reserves and the Strategic Petroleum Reserve. In addition, he is responsible for overseeing the Federal Government's involvement in the Great Plains Coal Gasification Project.

From February 16, 1982, until his present assignment, Mr. Bauer served as Principal Deputy Assistant Secretary for Fossil Energy. Previously he was the Acting Director of the Office of Coal Processing where he was responsible for developing and implementing the Federal Research and Development Program for Coal Liquefaction and Gasification.

Mr. Bauer assumed the position of Acting Deputy Program Director for Project Management in June 1981. He was responsible for assisting the Program Director in the design, siting, construction and operation of major coal liquefaction and gasification projects.

Mr. Bauer also served as Chief of Programs Support (Division of Fossil Fuel Processing), responsible for division budget development and execution, management information systems development and maintenance and program/project decentralization. He joined the Fossil Energy staff in 1976 as the Assistant Director, Major Facility Project Management where he was responsible for providing management direction for procurement of major coal conversion facilities.

From 1960 to 1975, Mr. Bauer held a wide range of positions with the Department of the Army where he gained managerial experience in anti-ballistic missile systems. His positions included: Engineering Consultant responsible for the systems development activities associated with an Advanced ABM/BMD Systems (Site Defense); Chief of the Missile Division, Ballistic Missile Defense Systems Command, involving responsibility for the design, development and testing of the SPRINT II and improved SPRINT II Missile Sub-System for the Site Defense System; Project Manager with the Advanced Ballistic Missile Defense Agency; Project Manager with the U.S. Army Missile Command and Missile Test Engineer and Project Engineer in the Army Rocket and Guided Missile Agency.

Mr. Bauer began his government career in 1958 immediately after graduating from Grove City College in Pennsylvania with a B.S. in Chemical Engineering. He served two years in the U.S. Army as a Missile Test Engineer in the Army Rocket and Guided Missile Agency, a position which he resumed as a civilian immediately after his discharge.

In 1983, President Reagan named Mr. Bauer as Meritorious Executive in the Senior Executive Service. Secretary of Energy Don Hodel conferred the Departmental Meritorious Service Award on Mr. Bauer in 1985.

Mr. Bauer was born in Lucinda, Pennsylvania, and currently resides in Falls Church, Virginia. He is married and has two children.

June 1985

U.S. Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202 252-5644

BIOGRAPHY

RICHARD D. FURIGA

Richard D. Furiga is currently serving as Deputy Assistant Secretary for Petroleum Reserves, U.S. Department of Energy (DOE). As Deputy Assistant Secretary, he is responsible for management of the Strategic Petroleum Reserve and the Naval Petroleum and Oil Shale Reserves. The Strategic Petroleum Reserve is the largest crude oil storage program in the world with almost 500 million barrels held in reserve along the Texas and Louisiana gulf coastline.

The Naval Petroleum and Oil Shale Reserves consists of three petroleum and three oil shale reserves, including the Nation's fourth largest producing oil field, the Elk Hills field in California. Until assuming his present responsibilities, Mr. Furiga served as Deputy Assistant Secretary for the Strategic Petroleum Reserve.

Mr. Furiga was an officer in the U.S. Navy from 1957 to 1977. His assignments included management positions in the petroleum logistics field; such as Director, Navy Energy Office and Director, Technical Operations, Navy Petroleum Office.

Mr. Furiga was born June 20, 1935, in New Eagle, Pennsylvania. He graduated from the U.S. Naval Academy in 1957 with a Bachelor of Science Degree in Engineering. He received a Master of Science Degree in Petroleum Management from the University of Kansas in 1972.

Mr. Furiga is married to the former Janet Marie Pietroboni. He has three children by a previous marriage: Christiann, a 1985 graduate of the University of Virginia; R. Colin, a senior in Pre-Law at Muhlenberg College in Allentown, Pennsylvania; and Merewyn, a sophomore at Chestnut Hill College in Philadelphia.

October 1985

U.S. Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202/252-5644

BIOGRAPHY

CAPTAIN WILLIAM W. RUMBOLD

Captain William W. Rumbold was named Director, Naval Petroleum and Oil Shale Reserves within the Office of Petroleum Reserves, Office of Fossil Energy, U.S. Department of Energy (DOE) in February 1986. He is responsible for management of the Naval Petroleum Reserves in California and Wyoming, and the Naval Oil Shale Reserves in Colorado and Utah.

Prior to reporting to the DOE for duty, Captain Rumbold served as Public Works Officer of the Washington Navy Yard. A career naval officer with 22 years service, Captain Rumbold's other previous assignments have included Public Works Officer of Naval Support Activity, Naples, Italy; Management Coordination Officer with the Trident Construction Program; Operations Officer of a Naval Mobile Construction Battalion; Advisor to the Republic of Korea Navy in the Joint U.S. Military Advisory Group; duty in Vietnam; and Public Works duty in El Toro, California.

Captain Rumbold received his B.S. degree in petroleum and natural gas engineering from the Pennsylvania State University and his M.S. degree in civil engineering from the University of Michigan. He is a registered Professional Engineer in the Commonwealth of Pennsylvania.

A native of Pennsylvania, Captain Rumbold and his wife Lynne, have two daughters: Donna, a freshman at the Pennsylvania State University and Jennifer, 13. Captain Rumbold and family reside in Alexandria, Virginia.

February 1986

J. RICHARD BERMAN

Deputy Federal Inspector
for the
Alaska Natural Gas Transportation System

J. Richard Berman was appointed Deputy Federal Inspector for the Alaska Natural Gas Transportation System on January 20, 1985. Mr. Berman has been a Federal employee since 1962. He joined the Office of the Federal Inspector (OFI) in June 1980 as Director of the Office of Audit and Cost Analysis and later became Director of the Office of Regulatory Affairs. During his tenure with the OFI, Mr. Berman also served as the Agency Authorized Officer for the Federal Energy Regulatory Commission.

Before coming to the OFI, Mr. Berman held the following positions: Assistant to the Managing Director (Field Operations) at the Interstate Commerce Commission (ICC), 10/78 - 6/80; Chief of Audit, ICC, 9/73 - 10/78; Research Associate, Financial Accounting Standards Board, 9/73 - 9/75; and Supervisory Auditor, U.S. General Accounting Office, 6/62 - 8/73.

Mr. Berman received a BS from the University of Connecticut in 1962 and an MBA from George Washington University in 1970.

Mr. Berman was born in Milford, Connecticut, in July 1940. He is married and has two teenage sons. Mr. Berman and his family reside in Potomac, Maryland.

Statement of Donald L. Bauer
Acting Assistant Secretary for Fossil Energy
Department of Energy
Before the
Committee on Appropriations
Subcommittee on Interior and Related Agencies
March 10, 1986

It is my pleasure to appear before you today in support of the President's budget proposals for the Petroleum Reserves, which include the Strategic Petroleum Reserve and the Naval Petroleum and Oil Shale Reserves, and the Office of the Federal Inspector for the Alaska Natural Gas Transportation System. I am accompanied by Richard D. Furiga, Deputy Assistant Secretary for Petroleum Reserves, and Mr. J. Richard Berman, Deputy Federal Inspector for the Alaska Natural Gas Transportation System.

PETROLEUM RESERVES

In October 1985, management of the Strategic Petroleum Reserve and the Naval Petroleum and Oil Shale Reserves programs was combined under a new Office of the Deputy Assistant Secretary for Petroleum Reserves within the Department's Office of Fossil Energy. We believe that this management structure will result in the more efficient use of the strengths of each program in the areas of policy direction, financial management, and planning.

Overview

Two major Administration policy proposals form the context for the Department's fiscal year 1987 budget request for the Petroleum Reserves programs: (1) a moratorium on further development and fill of the Strategic Petroleum Reserve, and (2) the offering for sale of Federal ownership interests in the Naval Petroleum Reserves No. 1 and 3.

The Administration is proposing to suspend Strategic Petroleum Reserve fill at the end of fiscal year 1986 when, as required by current law, the Reserve inventory will have reached 500 million barrels. Legislative language is proposed to remove provisions linking the sale of Naval Petroleum Reserve No. 1 crude oil to Strategic Petroleum Reserve fill rates. The Department believes that this policy is warranted by the combination of favorable oil market conditions and Federal budget constraints.

As a result of this policy, the Administration also believes that further development of Strategic Petroleum Reserve storage capacity is not warranted at this time. Accordingly, the fiscal year 1987 budget reflects the termination of solution-mining activities at the Bryan Mound and West Hackberry sites during fiscal year 1986 and the curtailment of procurement activities for new construction at the Big Hill and Bayou Choctaw sites. At the present time, underground oil storage capacity is approximately 509 million barrels and we will add approximately 10 million barrels during fiscal year 1987 through completion of the Phase II exchange cavern at the Bayou Choctaw site. We believe it would be inadvisable to add further storage capacity when we cannot foresee circumstances in the near-term which would dictate a need for fill of that capacity. This is particularly true with respect to the Big Hill site, since capacity development could be resumed more promptly and economically at other sites should the need for further oil acquisition materialize.

Under this policy, we will continue to maintain the Strategic Petroleum Reserve system in a readiness condition. We will continue to enhance the distribution capabilities at the Seaway and Capline complexes to ensure that the Reserve is capable of performing its mission as required.

The existence of a 500-million-barrel Strategic Petroleum Reserve, coupled with legislation enacted in 1984 to streamline the Department of Defense's petroleum procurement process, has obviated several of the original motivating factors which led to the establishment of the Naval Petroleum Reserves nearly 74 years ago. In particular, the Strategic Petroleum Reserve will be capable of pumping oil at 3 million barrels per day -- 30 times faster than the combined rate of the three Naval Petroleum Reserves. It thus represents a superior source of oil for emergencies.

Therefore, the Administration is now proposing to sell the government's ownership interests in the Naval Petroleum Reserves No. 1 and 3. The schedule and specific approaches for such transactions have not yet been determined and would depend in large measure on the enactment of legislation authorizing such sales. This proposal is part of a broader concept for converting Federal assets into private ownership and, in the process, reducing near-term requirements for additional Federal borrowing. The Department's proposed fiscal year 1987 budget provides for continued production of the petroleum reserves at maximum efficient rates (MER) in keeping with current law. Should a sale of one or more of these reserves be authorized and implemented during the coming fiscal year, we would submit appropriate amendments to the budget request.

I will first address the Strategic Petroleum Reserve budget.

Fiscal Year 1987 Budget - Strategic Petroleum Reserve

The proposed fiscal year 1987 budget for the Strategic Petroleum Reserve would implement a moratorium on the development and fill of the Reserve beginning in 1986. This reserve level, coupled with a more diversified, competitive world oil market, provides substantial protection against potential oil import reductions in the foreseeable future--a level of protection that would replace about 120 days of 1985 U.S. net petroleum imports and more than three years of U.S. imports from Arab OPEC countries.

Consistent with those proposals, we also are proposing to defer in fiscal year 1986 approximately $198 million of Strategic Petroleum Reserve Account appropriations. Additionally, we propose to defer those funds available in the SPR Petroleum Account that will not be needed to complete the required oil fill for fiscal year 1986. The proposed deferral amounts to $577.5 million, consisting of $549.6 million of funds appropriated for the Account in fiscal year 1985 and $27.9 million deposited in the account this year as a result of the test sale.

In fiscal year 1987, we plan to obligate approximately $150 million of the Strategic Petroleum Reserve Account on-budget funds proposed for deferral in fiscal year 1986. These obligations include the estimated requirements for operating and maintaining the Reserve in a standby readiness condition; for continuing the ongoing capital improvements program; for completing the currently proposed program for distribution enhancements; and for the Federal management of the Reserve.

Storage Facilities Development and Operations

The fiscal year 1987 planned obligations for Storage Facilities Development and Operations total $136,521,000, derived from prior year appropriations. This is a decrease of $64,607,000 from the fiscal year 1986 obligations plan, due to the proposed moratorium on facilities development in fiscal year 1986 and to the planned completion of a substantial portion of the distribution enhancements.

No further funding is proposed in the Phase I, Phase II, or Phase III budget categories. Phase I is complete and, in the Conference Report on the fiscal year 1986 Continuing Resolution, Congress agreed to the use of $916,000 of Phase I funds, $9,965,000 of Phase II funds and $70,094,000 of Phase III funds for other activities.

No funds remain in Phase I and we estimate that by the end of fiscal year 1986 remaining Phase II funds will have been used, primarily in connection with preparing exchange Cavern 17 at Bayou Choctaw for oil storage. However, as a result of the proposed moratorium, an estimated $156,691,000 of Phase III funds will not be obligated in fiscal year 1986. We propose that these funds be reprogrammed to the Non-Phase Specific and Management budget categories in the amounts of $145,300,000 and $11,391,000, respectively.

At the end of December 1985, the total underground storage capacity of the Reserve was 509.4 million barrels located at five sites as follows:

Bryan Mound	198.6
West Hackberry	165.8
Sulphur Mines	26.0
Bayou Choctaw	46.0
Weeks Island	73.0
Total	509.4

Capacity at Bayou Choctaw will be increased by 10 million barrels upon completion in fiscal year 1987 of surface facilities for Phase II Cavern 17. This cavern was acquired from a private firm in exchange for a smaller solution-mined cavern which was developed in connection with the exchange agreement. Funding for these facilities and the remaining surface facilities at Bryan Mound and West Hackberry is included in the obligations plan for fiscal year 1986. Also included in that plan are the obligational requirements for placing the Big Hill site in a standby mode, ready for restart of the site development if appropriate.

Non-Phase Specific has been a funding category within the Storage Facilities Development and Operations budget since fiscal year 1981. Its purpose is to fund facilities-related requirements not directly associated with phase specific development activities. In view of the proposed moratorium, all of the requested facilities-related funding requirements in fiscal year 1987 fall into this category.

Planned obligations for Non-Phase Specific in fiscal year 1987 are $136,521,000, all of which would be funded from the proposed reprogramming of Phase III funds that will not be obligated in fiscal year 1986.

Within the Non-Phase Specific funding category, there are four subcategories of funding, each of which is different from the others in terms of the activity or group of activities addressed. These subcategories of funding are Operations, Operations Support, Capital Improvements and Distribution Enhancements.

(1) Operations includes operations and maintenance (O&M), security, utilities - primarily electric power, and ongoing environmental requirements for all sites. Estimated funding for Operations in fiscal year 1987 is $103,960,000, consisting primarily of requirements necessary for maintaining sites in a standby mode, ready for drawdown and/or restart of capacity development, if appropriate.

(2) Operations Support includes continuing engineering, technical, analytic and logistics support, contractor activity monitoring, contract administration services, security systems planning and other types of services in support of operations activities. Estimated fiscal year 1987 funding for Operations Support is $9,634,000.

(3) Capital Improvements address the need for modifications to existing facilities to assure that mission objectives can continue to be met. Projects in this category usually require engineering design and analyses. These projects are identified as a result of continuing assessments of systems reliability, capability, vulnerability, and operational performance.

Planned obligations for fiscal year 1987 are $18,512,000. The primary focus will be on continuing with the ongoing program to provide all existing sites with deluge sprinkler systems, consistent with the recommendations of the Industrial Risk Insurers. In addition, permanent facilities will be added at Bryan Mound, Bayou Choctaw, Weeks Island, and St. James to replace existing temporary office and warehouse structures which are overcrowded and do not meet the Department's criteria for fire protection. Remaining activities will include design and engineering work on warehouse facilities, roads, and security enhancements.

(4) Distribution Enhancements was introduced as a Non-Phase Specific funding subcategory in the budget through a reprogramming action in fiscal year 1985 to address changes in commercial distribution systems which have limited the capability to distribute oil from the Reserve during an emergency. The maximum initial distribution capability for the 500 million barrels of oil that will be in storage by the end of fiscal year 1986 will be only approximately 2.3 million barrels per day, compared to an initial drawdown capability of over 3.3 million barrels per day.

The Distribution Enhancements program proposed in the fiscal year 1987 budget includes enhancements in the Seaway and Capline Complexes. Previous plans for enhancements to the Sun terminal in the Texoma Complex were cancelled following further analyses which disclosed that the enhancements planned would not substantially increase the terminal's throughput capability. It also was found that refinery capacity changes in the Beaumont/Port Arthur, Texas area have resulted in a strong likelihood of local demand being insufficient to achieve the terminal's maximum throughput rates.

When the currently proposed program is completed, maximum initial distribution capability will be increased to 3.1 million barrels per day.

The estimated total funding required to complete the proposed program is $78,749,000, of which $21,682,000 was obligated in fiscal year 1985 and $52,652,000 is planned for obligation in fiscal year 1986. The balance of $4,415,000 is requested in the fiscal year 1987 budget.

Management

This is a new budget category in FY 1987 and replaces Program Direction and Planning and Management Support. At the present stage of program development, activities previously described as Planning and Management Support activities are more appropriately described as part of overall Federal management of the Strategic Petroleum Reserve program.

Management funding provides for all salaries and expenses necessary to plan and manage the Reserve, including personnel at headquarters in Washington, those at the Oak Ridge Operations Office (ORO) and those at the Project Management Office (PMO) in New Orleans. In addition, the administrative overhead costs for the PMO in New Orleans are funded from this category. Management also funds several different kinds of information gathering, analysis work, and management and technical support used in making near-term and long-range management and policy decisions governing the accomplishment, goals, and objectives of the Strategic Petroleum Reserve program.

The fiscal year 1987 request level of obligations for Management is $13,423,000, a decrease of $2,077,000 from the combined fiscal year 1986 levels for Program Direction and Planning and Management Support.

The major funding change in fiscal year 1987 occurs in personnel compensation and reflects a reduction in Federal staffing as a result of the proposed moratorium. Fiscal year 1987 obligations are based on 120 full-time equivalents (FTE's) compared to an estimated 152 FTE's in fiscal year 1986.

SPR Petroleum Account

Funds are appropriated to the SPR Petroleum Account for the purchase of crude oil, marine and pipeline transportation, customs fees, terminalling charges, environmental taxes and other necessary oil acquisition-related expenses. Pursuant to the provisions of the Energy Policy and Conservation Act (EPCA) as amended, funds in the Account may also be used to finance costs associated with a drawdown of the Reserve. Additionally, the Federal receipts from a drawdown and sale of Strategic Petroleum Reserve oil create additional budget authority for refilling the Reserve.

The Energy Policy and Conservation Amendments Act of 1985, which extended the authorities of the Strategic Petroleum Reserve to June 30, 1989, also established a requirement for a test sale or exchange of approximately 1.1 million barrels of crude oil. A sale was commenced on November 18, 1985, by issuance of a Notice of Sale to potential purchasers and was completed in January 1986. A total of 966,809 barrels was delivered under the five contracts awarded and the proceeds of the sale amounted to approximately $27,949,000. These proceeds were deposited in the SPR Petroleum Account.

In compliance with current law, fill of the Reserve will continue in fiscal year 1986 until a level of 500 million barrels is reached. Based on this fill plan, $577,534,000 of available SPR Petroleum Account funds will not be needed in fiscal year 1986. The funds are proposed for deferral.

The Administration intends to seek the elimination of the legislative requirements concerning further fill of the Reserve and linkage to Naval Petroleum Reserve production and sales.

I will now address the Naval Petroleum and Oil Shale Reserves.

Fiscal Year 1987 Budget - Naval Petroleum and Oil Shale Reserves

The fiscal year 1987 budget request for the Naval Petroleum and Oil Shale Reserves (NPOSR) provides for a $163.6 million program. The requested new budget authority totals $127.1 million, to which is added $36.5 million available from prior year appropriations.

This request provides sufficient funds to continue producing the Naval Petroleum Reserve No. 1 (NPR-1), Elk Hills, located near Bakersfield, California, and the Naval Petroleum Reserve No. 3 (NPR-3), near Casper, Wyoming, at the maximum efficient rate through fiscal year 1987. Should privatization be completed prior to the end of fiscal year 1987, unexpended funds would be returned to the Treasury through a rescission. Revenues from the sales of NPR petroleum and reimbursements from Chevron U.S.A. Inc., the joint owner of NPR-1, are expected to total $1.1 billion in fiscal year 1987 (based on projected oil prices of just over $24 per barrel) should the Government retain ownership for the entire fiscal year.

The Administration's proposal to offer for sale the Government's ownership interest in NPR-1 and NPR-3 is part of the President's overall fiscal year 1987 proposal to dispose of Federal functions that closely resemble business activities, thereby relieving the taxpayer from further annual funding requirements and securing compensation for these assets based on their full market value.

NPR-1 covers property individually owned by the Government (78%) and Chevron (22%), with each owner sharing in production and costs according to its participating percentage. NPR-3 is fully federally owned and operated. The Department is currently developing economic analyses to determine conditions under which sale of NPR-1 and NPR-3 would be most attractive to the U. S. Government.

At the end of fiscal year 1985, we estimate that the two Reserves contained over 700 million barrels of crude oil recoverable by primary and secondary development, although these figures may be adjusted due to changing economic patterns in the oil market. Of this amount, the Federal government owned an estimated 550 million barrels which may, based on recent surveys of oil field sales, be worth nearly $6 per barrel. In addition, the fields contain significant quantities of natural gas and natural gas liquids which add to the value of the assets. After accounting for continuing production, we estimate that the Federal government's share of the two Reserves might be worth approximately $3 to $5 billion. However, since the Department intends to pursue a competitive sales process, the final price is dependent upon the oil market, the competitive procurement process and proposer conditions and assumptions. Actual receipts to the Treasury will be subject to the sales approach employed and bids received.

The Administration opted not to include NPR-2 (Buena Vista Hills, located adjacent to NPR-1) in the proposed sale because the reserve is already privately produced under lease arrangements that have existed since the 1920s.

Production from both NPR-1 and NPR-3 in fiscal year 1985 averaged 131 thousand barrels of oil per day, 369 million cubic feet per day of natural gas and 683 thousand gallons per day of liquid products. During the first quarter of fiscal year 1986, the two Reserves produced approximately 129 thousand barrels of oil per day, 385 million cubic feet per day of natural gas, and 680 thousand gallons per day of liquid products.

Revenues to the Treasury from the sales of petroleum products during the first quarter of fiscal year 1986 were $297.1 million, including Windfall Profit Taxes, and are estimated to be $1.2 billion for the full fiscal year. Pursuant to Section 1611 of the Department of Defense Authorization Act of 1986, Public Law 99-145, there is one-year extension for fiscal year 1986 for transfer of 30 percent of net revenues from the Reserves to the National Defense Stockpile Transaction Fund.

Since August 1, 1985, Bechtel Petroleum Operations, Inc. (BPOI) has performed production and development operations at NPR-1 under a 5-year management and operating contract. Also at NPR-1, a deep test exploratory well was started during fiscal year 1985, and will continue to be drilled throughout fiscal year 1986 and tested in fiscal year 1987. The project, costing almost $26 million, will be California's deepest well, testing four potentially productive zones, if the BPOI subcontractor, Parker Drilling Company, is successful in our objective of drilling and testing to 25,000 feet.

At NPR-2 in California, significant progress was made in conveying the surface rights of ten parcels of land located on the Reserve to the owners of residences on those parcels. In accordance with Private Law 98-32, the Government set the fair market value of each of the lots, and notified the homeowners of the procedures to be followed in order to purchase the surface rights. As of now, all ten homeowners have made at least partial payment toward the purchase of their lots. Three have paid in full. The remaining payments are due within three years of the homeowners' application for conveyance. The government will retain all subsurface mineral interest, as well as the right to remove any mineral deposits.

At NPR-3, the success of the drilling and well maintenance programs has kept production from declining. The enhanced recovery program in fiscal year 1987 allows for continued operation and maintenance of the pilot projects, except for the oxygen-enriched in-situ combustion pilot project, which has not proved successful. The remaining pilots will be evaluated, and a decision regarding field implementation will be made by the end of fiscal year 1986. The prime contract for production and development operations at NPR-3 is performed by Lawrence-Allison and Associates West, Inc., the management and operating contractor under a 5-year contract which expires on September 30, 1986. A Request for Proposals (RFP) to manage and operate the Naval Petroleum and Oil Shale Reserves in Colorado, Utah, and Wyoming was issued in early fiscal year 1986. Following evaluation of the offers received in response to the RFP, a new contract, to begin October 1, 1986, will be awarded.

In activities related to the Naval Oil Shale Reserves (NOSRs), two of the 14 wells to prevent migration of natural gas from NOSR-3 to nearby commercial wells have been successfully drilled. This action was necessary because of the statutory requirement to protect the petroleum resources within the Naval Petroleum and Oil Shale Reserves. A gas sales contract is expected to be awarded in fiscal year 1986 with initial sale of natural gas produced from the offset wells are expected to total $7 million through fiscal year 1987.

In fiscal year 1984, the Department of the Interior (Bureau of Land Management) and the Department signed a Memorandum of Understanding reserving to the Deparment the right to contract for 4,100 acre-feet per year of water from Colorado's Ruedi Reservoir. In fiscal year 1986, the Department plans to purchase the water rights to the Ruedi Reservoir from the Bureau of Land Management. This will provide an emergency water resource in the event of oil shale development at NOSR-1.

Additionally, implementation of a plan to decommission the Anvil Points Oil Shale Research Facility, located on NOSR-3, progressed significantly in fiscal year 1985. Work on the demolition and reclamation of the land began on August 1, 1985. Demolition was essentially complete in January 1986, with habitat restoration on schedule for completion by August 1986. With regard to the spent shale at Anvil Points, the Department contracted with the Naval Energy and Environmental Support Activity (NEESA) to assess the environmental impacts for disposing accumulated oil shale at the Anvil Points Oil Research Facility. NEESA concluded that the environmental impacts of leaving the shale pile in place, with appropriate erosion controls and seepage monitoring, would not pose a significant threat to human health or environment. Based on the NEESA and other studies, the Department concluded that no further environmental mitigation is required beyond this minimal effort.

Fiscal Year 1987 Budget

NPR-1 and NPR-2

The fiscal year 1987 budget request for NPR-1 and NPR-2 is $130,340,000, continuing the same level of funding as in fiscal year 1986 and reflecting stablilization of operations and requirements. Funding is requested in the following categories:

Operations and Maintenance ($95,640,000) - This funding category provides for the day-to-day field activities necessary to continue production at Maximum Efficient Rates (MER). Major activities funded are:

(1) Business Management ($19,100,000) - Provides for administrative activities of the Unit Operator such as financial, accounting, legal, secretarial and related support services. It also includes the purchase of safety equipment, office supplies, automated engineering services, security, in-house automated data processing, employee services and safety and environmental licensing.

(2) Operations Management ($39,040,000) - Provides for the maintenance and repair of pipelines, tank setting, pumps and other equipment to collect, store and distribute oil and gas; maintenance of waterflood injection, fresh water and waste water disposal system; surface and downhole well work; Tulare Zone steam operations; vehicle maintenance and replacement; operation and maintenance of the three gas plants and associated facilities; and supervision of all drilling programs.

(3) Engineering Management ($19,100,000) - Provides for facility and petroleum engineers and technical contract services. This includes drafting, construction, cathodic protection, corrosion control, electricity, laboratory services, core storage, and reservoir engineering and geological studies.

(4) Remedials ($14,400,000) - Provides for the major well work required to maintain existing wells in optimum producible condition. The types of remedials planned include stimulation work to remove well-bore damage; recompletions; control of excessive gas/oil ratios; abandonments; tubing replacements; and installation of artificial lift. A total of 166 remedial workovers is planned for fiscal year 1987.

(5) Operator Fee ($4,000,000) - Provides for the base and award fee paid to the management and operating contractor.

Development Drilling ($22,900,000) - Provides for the drilling of all development wells at NPR-1. This includes water injection and enhanced oil recovery wells in addition to producing wells. Along with securing additional production, this program is designed to maintain reservoir and pool performance through pressure maintenance and to further define reservoir limits. The fiscal year 1987 request provides for the drilling of 35 wells, reflecting completion of the primary drilling program and continued reduced drilling requirements.

Development Facilities ($8,000,000) - Provides for the construction and/or modification of facilities needed to support continued development and production of the field. Included in this request are facilities required for environmental and safety compliance, implementation of enhanced recovery methods, and to adapt to changing field conditions such as declining reservoir pressures and increasing volumes of water and gas produced with crude oil.

Exploration Drilling ($3,800,000) - Provides for the drilling of exploratory wells at NPR-1 with the potential for increasing producible hydrocarbon reserves. Based on evaluation of geophysical data, the fiscal year 1987 request funds the drilling of one well to the Carneros Zone, a producing zone at NPR-1.

NPR-3

The fiscal year 1987 budget request for NPR-3 is $22,614,000 and provides funding for Operations and Maintenance ($15,610,000); Development Drilling ($6,754,000); and Development Facilities ($250,000). This request is a decrease of $6,469,000 from fiscal year 1986, due principally to cost savings resulting from more efficient operations and a reduction in enhanced recovery pilot project activity.

This request provides funding for the normal oilfield operations and maintenance activities; continues development drilling to the deepest zones, with 22 wells planned for fiscal year 1987; initiates an in-fill drilling program in a section of the Shannon reservoir not amenable to enhanced recovery technology; and provides for engineering and design plans for field implementation of enhanced recovery processes in the Shannon reservoir.

Enhanced recovery pilot projects will be operated through fiscal year 1987. A decision regarding expanded implementation of one or more of the pilots will be made by the end of fiscal year 1986, if technically and economically feasible. This plan allows for verification of pilot results before the costs of expanded implementation are incurred.

Naval Oil Shale Reserves (NOSRs)

The fiscal year 1987 budget request for the NOSRs is $5,241,000. This provides full funding for the drilling of six offset gas wells at NOSR-3 to complete the natural gas protection plan and related operations and maintenance costs. Also included in this request are funds to continue land management activities at all the NOSRs, and for mitigation of adverse environmental conditions arising from the spent shale pile at Anvil Points.

Program Direction

Funding Program Direction provides for the salaries, benefits, travel and other related costs to support 95 full-time equivalent employees and eight military personnel required to plan, develop, manage and monitor the execution of NPOSR program activities. The budget request for this activity is $5,374,000.

Funding from Prior Year Appropriations

Funds totaling $36.5 million for the NPOSR are available from prior year appropriations for use in fiscal year 1987 as offset financing. These funds are available due to several factors.

First, $19.5 million of funds were not used at NPR-1. This is due to a reduced drilling program and unit drilling costs ($1.8 million); reduced facility requirements related to the drilling program ($4.0 million); and a reduction in operations and maintenance costs ($13.7 million) because of improved, more efficient contractor operations, decreased maintenance requirements associated with the drilling program and decreased costs for oilfield related equipment and supplies.

Second, $9.0 million is available from NPR-3 funding because evaluation of enhanced recovery pilot results has been slower than anticipated, delaying field implementation.

Third, $1.0 million is available from Program Direction funding due to lower staffing of the NPOSRs than was originally planned.

Fourth, the completion of facility construction contracts by the Naval Facilities Engineering Command at NPR-1 resulted in cost avoidance of $7.0 million.

FEDERAL INSPECTOR FOR ALASKA NATURAL GAS PIPELINE SYSTEM

The Office of the Federal Inspector for the Alaska Natural Gas Transportation System is responsible for coordinating all Federal activities pertaining to the pipeline in order to assure timely, efficient, safe, and environmentally sound construction including the assessment of developments in the world energy market, specifically the U.S. and Canadian oil and gas situation as they affect the Alaska Natural Gas Transportation System.

The $221,000 requested for FY 1987 would support the following activities:

- Continue technical reviews of ANGTS design and/or remobilization packages. ($36,000)
- Complete long-term Frost Heave research using prior year funding. ($11,000)
- Continue development and refinement of Remobilization Encyclopedia. ($10,000)
- Continue to assess developments in U.S. and Canadian energy markets, and gas exploration and transportation projects in reference to ANGTS. ($33,000)
- Continue to maintain liaison with project sponsors, producers, other Government agencies, State of Alaska and Canadian Government. ($26,000)
- Salaries and related expenses for administrative and support functions. ($105,000)

SUMMARY STATEMENT

Mr. **Yates**. Tell us what you want us to do, Mr. Bauer.

Mr. **Bauer**. Thank you, Mr. Chairman.

As you said, I have Mr. Furiga with me. It was last October, we elected to combine the SPR and the Naval Petroleum Office, both of those, into one organization. That was a good thing to do, and it has been a way of streamlining the management of both of those functions having to do with petroleum reserves.

As you also mentioned, sitting behind me is Richard Berman, the Deputy Federal Inspector for the Alaska Natural Gas Transportation System. We also have with us a new member of the fossil office. Seated behind me is Captain William Rumbold. He is the new Director of the Naval Petroleum and Oil Shale Reserves. Captain Rumbold comes to us with well over 12 years of petroleum research and service in that area. We are pleased to have him as part of the team.

Mr. **Yates**. Is he one of the administration that wants to sell the reserve?

Mr. **Bauer**. He is the head of the Naval Petroleum and Oil Shale Reserves.

Mr. **Yates**. Does he favor it?

Mr. **Bauer**. Yes, he does, Mr. Chairman.

Do you not?

Captain **Rumbold**. Yes.

ADMINISTRATION'S PROPOSAL

Mr. **Bauer**. As Secretary Herrington testified before you, I think it was February 20th, the administration is proposing two major actions, and those are for the Naval Petroleum Reserves, as well as the Strategic Petroleum Reserve. One is that we are proposing to suspend at this time, not cancel, oil fill for the SPR once that reserve has reached 500 million barrels—roughly sometime in late May. I recognize that Secretary Herrington has previously described the major policy considerations that led to this proposal, and those were the combination of favorable oil markets and budget constraints.

LEVEL OF PROTECTION

If I may, let me amplify a couple of points that flow from those considerations. First, the term "insurance policy" has often been applied to the Strategic Petroleum Reserve. It is an appropriate description, but the amount of insurance is almost always measured in days of protection against a total disruption of oil imports. So that is where the people talk about the 90 to 120 days.

Mr. **Yates**. What is your guess on it?

Mr. **Bauer**. It is in that range.

Mr. **Yates**. All right. I just want it verified.

Mr. **Bauer**. That is only one part of the factors you take into account. It is also important to look at the protection afforded by the reserves in terms of where we get our oil. Today, most of our imported oil comes from Mexico, Canada, the North Sea and Venezuela. I don't believe any of those are likely to impose a hostile embargo against the United States.

Mr. YATES. They imposed a hostile cartel pricing system against the United States.

Mr. BAUER. The OPEC countries.

Mr. YATES. That was part of it.

Mr. BAUER. They are not really——

Mr. YATES. Aren't they part of it?

Mr. BAUER. If we look back to the 1970s, mainly, it was the Arab countries of OPEC that really were the drivers of that. Our import levels today are much lower. I think less than one-tenth of the total imports we get today come from those Arab OPEC countries. So if we look at what SPR actually offers in terms of insurance, the amount that we get from them equates to about a three-year supply. It is another way to look at it.

Mr. YATES. Assuming those lines stay open.

Mr. BAUER. Yes, Mr. Chairman, that is another assumption.

As economic and oil market conditions change, we will continue to reassess this policy. We will be prepared to restart the activities at the reserve if and when necessary.

Mr. YATES. Your argument would do away with the need to go out and sell your Strategic Petroleum Reserve.

Mr. BAUER. You mean the Naval Petroleum Reserves?

Mr. YATES. No. Sell all your oil, because you have lines to Venezuela and lines to Mexico and Canada. Why do you need to have anything, any reserve?

Mr. BAUER. In the event of a disruption, there could conceivably be a disruption.

Mr. YATES. If that is true, you had better fill up your reserve, hadn't you?

Mr. BAUER. Well, but the reserve doesn't provide you the insurance, or it isn't to provide you the insurance and the protection against the entire world oil market.

Mr. YATES. Suppose there is an embargo. Suppose you have the OPEC nations putting an embargo on it, like they did in 1973.

Mr. BAUER. If the Arab countries do it today, I will agree with that. So I am getting one-tenth of my imports from those Arab countries today, and if I am at 4.3 million barrels, one-tenth puts me down to about 3.6 million barrels.

Mr. YATES. Suppose the embargo is worldwide, suppose they did it to Japan and Europe. We would have a bigger drain on our resources, wouldn't we?

Mr. BAUER. In looking at the half a billion barrels that we have in the ground today, I think that would have a minor effect on the total world market if we look at just that half a billion barrels that are in the ground.

Mr. YATES. What I am trying to say is, as far as I am concerned, I still think our Strategic Petroleum Reserve is as valuable for our national defense purposes as our reserves are, and probably more, because you can get at it much easier, can't you?

Mr. BAUER. Yes. You can draw the SPR down 30 times faster than you take oil out of the Naval Petroleum Reserves.

Mr. YATES. That is why you want to build up those reserves even more, isn't it?

Mr. Bauer. When the time is right, Mr. Chairman.

Mr. Yates. Not now. In other words, when we were paying $30 a barrel for the oil, it was proper to buy it for the reserve, but now that it is only $15 a barrel, you don't think it is proper to buy it for the reserve. Is that what you are saying?

Mr. Bauer. I guess if oil were free, one could go ahead, or if one had sufficient money, one could go ahead and store an indefinite amount.

Mr. Yates. One could. We are talking about a reserve for national security purposes.

Mr. Bauer. I have seen several analyses, and the issue turns out to be what is the right amount that one needs, what is the appropriate level one needs for national security purposes? I have seen several analyses. I have seen EIA projections that show that the imports are going to go up significantly by 1995. I have seen some analyses that say, well, for national security, DOD uses this much in peace time and this much in war time, and looking at all those analyses and looking at the projections—and there are a lot of assumptions made in this—and one has——

LEVEL OF INVENTORY

Mr. Yates. What is the amount you want to put into the reserve? It is 750 million barrels, isn't it?

Mr. Bauer. The system has been designed, and if one went to it, there would be 750 million barrels, yes.

Mr. Yates. That is a pretty good figure, isn't it? Personally, I would favor a billion barrels, but 750 million—I think we ought to finish it. Don't you think we ought to finish it?

Mr. Bauer. I think a billion—Rick, wasn't that the number at one time, the original, when they first had discussions about it and it was subsequently revised down to 750 million, because that equated to so many days' supply?

Mr. Furiga. The law authorizes a billion barrels; 750 million is the currently approved goal or target in the administration, and that is still the goal and target. What we are talking about is when that will be achieved.

Mr. Yates. He wants to suspend it for the next five years, don't you?

Mr. Bauer. I don't know.

Mr. Yates. Congress kind of put a time on it with Gramm-Rudman, didn't it? It wants to get rid of the deficit in five years. If it wants to do that—the administration, of course, approves of that. If the administration wants to do that, it says suspend buying for this year at least because of budgetary constraints.

Why aren't the budgetary constraints going to be even greater the next few years? Look at what Gramm-Rudman cuts will be proposed for the 1987 budget. They are drastic, much more drastic than the present ones. And the ones after that aren't a lot easier, if indeed they are. So I think you ought to be in a special position. I think you are as much a part of national defense as the defense budget, even though the administration doesn't think so.

Mr. Bauer. I tell you what I am doing now. We have said we are going to fill to 500 million barrels. What I am actively looking at now and analyzing is the amount of money that was authorized to us for oil fill. And taking a look at the oil prices, but not having made the decision yet, I am working within the department and the administration on raising that number up to possibly 502 million barrels.

Mr. YATES. What you are saying is, "Congressman Yates, I hope your committee overrules me", then?

Mr. BAUER. No, I am saying within the dollars that I have and the ground rules of Gramm-Rudman, we are actively looking at a lot of things. Just like on this moratorium, we have said we will continue to revisit it, and so we will as time goes by. Yes, Gramm-Rudman is for five years, but there could be something that could dictate we do otherwise.

Mr. YATES. So you are talking about the very big additional purchase of two million barrels, aren't you? And how much does that amount to in terms of the total?

Mr. BAUER. Today's price for Mexican crude delivered, is about $16.75 a barrel delivered, right?

Mr. FURIGA. It is about $15.

Mr. YATES. As a matter of fact, the condition Mexico is in, you could make a more favorable contract, couldn't you?

Mr. BAUER. We have an existing contract that goes to August of this year.

Mr. YATES. I thought when the prices went down, you could amend your purchase. Wasn't that your testimony last year?

Mr. FURIGA. The Pemex contract—Mexico has one price for all its customers. That is the official price. That official price has, indeed, been dropping in the last months. For the last part of February, it was $14.50 a barrel, and that was down from $16, from the first part of February.

Mr. YATES. The amount over that is delivery cost?

Mr. FURIGA. Yes. That is normally for the transportation bill to deliver from Mexico. That is why it is a favorable contract for us, because of the transportation.

Mr. YATES. This is a good time to buy from Mexico, isn't it? Mexico needs the money, and you need the oil.

Mr. FURIGA. All things being equal, any purchase of oil requires near-term outlays, and one of the things the moratorium addresses is getting the near-term outlays out, both on-budget and off-budget.

Mr. YATES. Okay. I think I may have interrupted you.

Mr. BAUER. That is okay. Like I was saying, we are going to continually review, evaluate and assess it and recognize Gramm-Rudman is for five years. At the end of this year, we will have 509.4 million barrels' capacity. In 1987, exchanging one cavern at Bayou Choctaw puts us up to about 520. So what I am saying is that somewhere between now and when that happens, I think that is March of 1987, you will have 520 million barrels of capacity that one could reinitiate filling between now and that time. What we have said is——

Mr. YATES. What was the time?

Mr. BAUER. Between now—that cavern will be ready in March of 1987. March of 1987, we will have 520 million barrels of capacity.

Mr. YATES. Is the administration proposing that?

Mr. **BAUER**. That additional cavern is part of the 1987 budget, right?

Mr. **FURIGA**. They are not proposing filling it.

Mr. **BAUER**. Not filling it, I am saying in terms of capacity, it is there, though. So when conditions are right, we could conceivably go back to fill it.

Mr. **YATES**. When will conditions be ready? When will conditions be righter than they are now for buying the oil?

Mr. **BAUER**. I don't know the answer to that one. They could drop lower.

Mr. **YATES**. All right. If they drop lower, then you will buy some more?

Mr. **BAUER**. A congressman told me it would be $9.95 by Memorial Day. I don't know if it will be that.

Mr. **YATES**. If it is, what happens if Mexico files a bankruptcy?

Mr. **BAUER**. Mexico needs a lot of money to meet their debt, that is true.

BIG HILL SITE

Mr. **YATES**. Don't we need Big Hill?

Mr. **BAUER**. I think—I will let Rick talk in a moment. I think one could go ahead—let's put fiscal deficit aside for just a moment.

Mr. **YATES**. All right, let's do that.

Mr. **BAUER**. You could probably more economically come up with capacity at existing sites than you could at Big Hill, and you could go to a 610 million barrell system

Mr. **YATES**. How are you going to get to 750 without Big Hill?

Mr. **BAUER**. I am just saying——

Mr. **YATES**. Are you going to get to 750 without Big Hill?

Mr. **BAUER**. No. You can only get to 610, Mr. Chairman.

Mr. **YATES**. So you need Big Hill to go above 610?

Mr. **BAUER**. Yes, sir.

Mr. **YATES**. What is the state of Big Hill's construction?

Mr. **BAUER**. If one did it in terms of dollars and cents——

Mr. **YATES**. I mean as of today. Where are you?

Mr. **BAUER**. Dollars and cents, it is about one-third complete.

Mr. **YATES**. And still going?

Mr. **FURIGA**. No. We have stopped all work on Big Hill. We are completing the existing contracts in place, we are completing those, but we are not awarding new construction contracts. As Mr. Bauer said, in terms of pure dollars and cents, it is about one-third funded, and we anticipate no further obligations for construction during the moratorium.

Mr. **YATES**. All right. What if the committee overrules that? Will you go forward?

Mr. **FURIGA**. We will resume the work in the manner we did last fall.

Mr. **YATES**. Is this a phased construction? Can it be a phased construction?

Mr. **FURIGA**. It has turned into a phased construction, Mr. Chairman.

Mr. **YATES**. Is that increasing the cost to Big Hill?

Mr. **Bauer**. I think if you look at the estimated cost of Big Hill several years ago, the estimated cost today is significantly lower from that time.

Mr. **Yates**. Why is that?

Mr. **Furiga**. Because of the state of the oil service industry and the oil construction industry these days. It is rather depressed.

Mr. **Yates**. You are making a very good argument for going forward, aren't you?

Mr. **Furiga**. Again, it is near-term outlays. If we resume Big Hill, it will cost approximately $300 million to complete Big Hill. A big chunk of that is near-term outlays for construction.

Mr. **Yates**. How much?

Mr. **Furiga**. $150 million.

Mr. **Yates**. But you get it out of the way and you have a place to store 750 million barrels, haven't you?

Mr. **Furiga**. That would give you a total of 750 million barrels capacity. As Mr. Bauer said, if a decision were made to resume capacity development, the economic places to do that would be Bryan Mound, West Hackberry and Bayou Choctaw, where the facilities are already constructed. We have spent that money.

Mr. **Yates**. That would increase your capacity along with Big Hill, wouldn't it?

Mr. **Furiga**. That would get us to 610 million barrels.

Mr. **Yates**. What happens if you decide to build to a billion? You have to go beyond Big Hill, don't you?

Mr. **Furiga**. Yes, sir.

Mr. **Yates**. Do you have any place to go?

Mr. **Furiga**. That has not been defined. We have never been asked to define that last 250 million barrels to get to a billion.

Mr. **Yates**. Mr. Bauer, I interrupted you. Go ahead. What else do you have to say?

Mr. **Bauer**. Going back to the other point, if you went ahead with Big Hill, it would not make economical sense to move the oil from those caverns over to Big Hill.

ENERGY VULNERABILITY

Mr. **Yates**. Now, do you agree with an article that appeared in the Washington Post on March 9th, fairly recently. It says this:

> The collapse of oil prices has triggered an economic chain reaction in the Nation's oilfields causing a sharp decline in drilling and threatening a permanent loss of production from thousands of low-volume stripper wells.

Is this true?

Mr. **Bauer**. That is a true statement.

Mr. **Yates**. It continues,

> The decline in exploration and production will make the United States as vulnerable to oil embargoes and escalating oil prices in the 1990s as it was in the 1970s, experts say.

Do you agree with that?

Mr. **Bauer**. The stripper wells they are talking about are those that produce 2.8 barrels per day, and I think there are about several hundred thousand.

Mr. **Yates**. What about the argument that the decline in low-volume stripper wells will make the United States vulnerable, just as vulnerable as it was during the time of the oil embargo? So-called experts are saying that.

Mr. **Bauer**. I know.

Mr. **Yates**. And you are a so-called expert.

Mr. **Bauer**. As one closes those stripper wells, who is to say? And one would have to know the geology to know whether those stripper wells can come back. And then, number two, just because there is a decline in the oil prices, that doesn't necessarily argue for one to go back to filling the SPR.

Mr. **Yates**. Why doesn't it?

Mr. **Bauer**. Because there are many factors that one has to take into account when one does that. The one you mentioned was the changing condition of the oil market. But there are other things, which are the difficult questions and issues facing us, and that has to do with the budget deficit. It really does.

Mr. **Yates**. Well, the President doesn't seem to think the budget deficits should stop going forward with the national defense budget, does he?

Mr. **Bauer**. No, sir.

Mr. **Yates**. Do you consider this Strategic Petroleum Reserve to have some importance in our national economy and well-being?

Mr. **Bauer**. Yes, I do, Mr. Chairman.

COMPTROLLER GENERAL'S OPINION

Mr. **Yates**. All right. I want to put into the record a copy of the Comptroller General's letter addressed to you on February 25th, as well as his opinion about your deferrals, and he says he is going to sue you if you continue to defer, right?

Mr. **Bauer**. Yes, Mr. Chairman.

[The information follows:]

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

February 25, 1986

B-220532

The Honorable John S. Herrington
Secretary, Department of Energy

Dear Mr. Secretary:

As you know, this Office is required to comment on deferrals proposed by the President under the Impoundment Control Act (the Act), including whether they are in accordance with existing statutory authority. 2 U.S.C. § 685(b). We have concluded that the current deferral of $156.8 million of the $197,940,825 reported by the President in Deferral No. D86-37 of his Third Special Message, February 5, 1986, is not authorized by the Act. These funds must timely be made available for obligation. Please advise us by March 3, 1986, when these funds will be released.

Sincerely yours,

Charles A. Bowsher

Comptroller General
of the United States

Enclosure

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

February 25, 1986

B-220532

To the President of the Senate and the
Speaker of the House of Representatives

On February 5, 1986, the President's third special message for fiscal year 1986 was submitted to the Congress pursuant to the Impoundment Control Act of 1974. This letter is our report, as required by section 1014(b) of the Act, 2 U.S.C. § 685, on one deferral in that message, affecting budget authority for the Strategic Petroleum Reserve (SPR). We conclude, for the reasons given below, that of the $197.9 million deferred, the withholding of $156.8 million is not in accordance with existing statutory authority. We do not in this report question the deferral of the remaining $41,140,825 of budget authority. We are continuing to examine this deferral, and will advise you if we conclude that it, too, is impermissible under the Impoundment Control Act. We will report separately on the remainder of the third special message.

DEPARTMENT OF ENERGY

D86-37 Energy Programs
Strategic Petroleum Reserve
Amount Deferred: $197,940,825
89X0218

This deferral involves budget authority provided the Department of Energy (DOE) for the development, operation, and management of the SPR. This account was the subject of a deferral in fiscal year 1985. On February 6, 1985, the President announced a deferral of $270,738,000 in budget authority for the SPR (Deferral No. 85-31A). He explained that the deferred funds consisted of appropriations for the construction of crude oil storage facilities and resulted from his proposed indefinite moratorium on further development of the SPR. The President indicated that he would reassess the moratorium as fiscal and oil market conditions warrant.

In August 1985, however, the Congress passed and the President signed the Supplemental Appropriations Act for fiscal year 1985 expressly disapproving the deferral and directing that the funds be made available for obligation: "The Congress disapproves the proposed deferral D85-31A * * *. [T]he amount of the proposed deferral disapproved herein shall be made available for obligation." Pub. L. No. 99-88, 99 Stat. 293, 341 (1985).

The budget authority was made available shortly thereafter, and DOE issued an invitation for bids for SPR storage construction. DOE received bids on two contracts for the SPR's Big Hill storage site on December 13 and December 20, 1985. On December 27, DOE suspended award of these contracts. At the same time, DOE suspended receipt of bids scheduled for a third contract on January 21, 1986, delayed issuance of an invitation for bids for a contract for construction work at the Bayou Choctaw cavern, and directed its field office to terminate leaching activities at Bryan Mound and West Hackberry caverns. As a result, the funds have remained largely unobligated.

On February 5, 1986, the President reported the present deferral of $197,940,825 of budget authority for the SPR account. DOE has indicated that $156,800,000 of this amount is a redeferral of budget authority that was previously subject to the 1985 deferral proposal, D85-31A. As with his fiscal year 1985 deferral, D85-31A, the President reports in his February 5 special message that the pending deferral, D86-37, results from his proposed indefinite moratorium on further development of the SPR. The President states again, as he did in 1985, that he will reassess the moratorium as fiscal and oil market conditions warrant. In the meantime, he reports, the deferral will result in an indefinite curtailment of new storage facilities construction. He indicates that partially completed storage facilities will be mothballed, and completed facilities will be maintained in a state of standby operational readiness.

Section 1013(a) of the Impoundment Control Act of 1974 (the Act) (Pub. L. No. 93-344, 88 Stat. 332, 2 U.S.C. §§ 681, 684(a)) authorizes the President to defer budget authority until the end of the fiscal year in which the special message proposing the deferral is transmitted to the Congress. Deferred budget authority must be released for obligation earlier if either House of Congress passes an impoundment resolution disapproving the proposed deferral. The Act does not address the question of reimpoundment after a disapproval of an initial impoundment.

We have not interpreted the Act as absolutely prohibiting reimpoundments. We evaluate reimpoundments on a case-by-case basis. In some circumstances, we have not objected to the reimpoundment of funds that were the subject of an earlier disapproved impoundment. See, e.g., B-217736, April 12, 1985; B-208140, October 29, 1982.

Recently, for example, we concluded that funds which had been deferred without success could be redeferred in the next fiscal year, pending congressional action on a proposal then before the Congress to permit a transfer of both the redeferred funds and funds appropriated for the same purpose which had not been deferred, to other appropriation accounts. The redeferred funds were insufficient to complete the project for which they had been provided (building a tunnel). We were persuaded that the redeferral presented the Congress with different alternatives and considerations than the first deferral, and made sense to avoid a wasteful result: if the transfer were approved by the Congress, thus indicating its agreement that the tunnel should not be built, it would have made little sense to require the obligation of the redeferred funds toward the project. B-217736, supra.

In another instance, we concluded that funds which had been proposed for rescission without success could be deferred pending the agency's decision regarding the most sensible use of the funds. B-208140, supra. In that case, the reason for the later deferral was fundamentally different from the reason for the earlier rescission proposal, when the President in effect proposed never to use the funds for any activity.

In our view, the redeferral here of $156.8 million, unlike the reimpoundments in B-217736 and B-208140, does not result from any changed circumstances. In fact the reason given for the redeferral is the same reason which the Congress considered and rejected in August 1985. The President stated in both cases that the deferral resulted from his proposed indefinite moratorium on further development of the SPR, and that he would reassess his moratorium as fiscal and oil market conditions warrant.[1] As noted above, the Congress, after the first deferral, rejected this as a basis for withholding the SPR funds.

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[1] In explaining the present deferral, D86-37, the President also said, "These funds cannot effectively be used this year * * *." According to DOE officials, the only reason the funds cannot effectively be used this year is the President's indefinite moratorium. But for the moratorium, they said, the funds could be used.

In its report on the fiscal year 1985 Supplemental Appropriations bill, which disapproved deferral D85-31A, the House Committee on Appropriations stated, "The long lead times necessary to construct and fill capacity require attention be given to future, rather than current, needs." H.R. Rep. No. 142, 99th Cong., 1st Sess. 107 (1985). The Committee pointed out that as a result of the deferral, the country would have no flexibility to deal with a crisis, and stated its expectation that construction recommence and that DOE adhere as closely as possible to previous schedules. Id. The Senate Appropriations Committee agreed with the House: "By concurring with the House and overturning the deferral, the Committee expects construction to restart immediately and adhere, as much as possible, to previous schedules." S. Rep. No. 82, 99th Cong., 1st Sess. 152 (1985).

The President, with the redeferral, is presenting the Congress with no new alternative or considerations; rather, he is asking the Congress to reconsider that which it has already thoroughly considered and rejected. Under these circumstances, it would be inconsistent with the purposes of the Act to allow the President to reimpound funds that were the subject of the previous impoundment. Taken to the extreme, such an approach would permit the President to withhold the funds indefinitely. This approach would negate the requirements of sections 1012(b) and 1013(b) of the Act to make budget authority available for obligation. We cannot interpret the Act in a way that effectively invalidates the procedures and safeguards that were established by its enactment.

Accordingly, we conclude that the redeferral of $156.8 million is not permissible under the Act and that the funds must timely be made available for obligation. We are advising the Secretary of Energy of our conclusion. We will monitor this account to assure compliance with the requirements of the Act.

Charles A. Bowsher
Comptroller General
of the United States

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

March 4, 1986

B-220532

To the President of the Senate and the
Speaker of the House of Representatives

As required by section 1016 of the Impoundment Control Act (the Act), this is to advise you of the status of budget authority which the President is withholding contrary to the Act.

Pursuant to section 1013(a) of the Act, 2 U.S.C. § 684(a), the President reported to the Congress, on February 6, 1985, the deferral of $270,738,000 appropriated to the Department of Energy for the development, operation and maintenance of the Strategic Petroleum Reserve (SPR). On August 15, 1985, the Congress passed legislation, the Supplemental Appropriations Act for fiscal year 1985, which the President signed, expressly disapproving the deferral and directing that the funds be made available for obligation. Pub. L. No. 99-88, 99 Stat. 293, 341 (1985).

Under section 1013(b) of the Act, 2 U.S.C. § 684(b), funds proposed for deferral must be made available for obligation if either House of Congress passes an impoundment resolution disapproving the deferral. The SPR budget authority was made available, pursuant to the Supplemental Appropriations Act, but remained largely unobligated. However, on February 5, 1986, the President announced a deferral of $197,940,825, which includes $156.8 million that was subject to the earlier, disapproved deferral. Because the reason given for the February 5, 1986, redeferral of $156.8 million was the same as that which the Congress considered in August 1985 and rejected by law, we believe the current withholding of the $156.8 million is in violation of the Supplemental Appropriations Act and the Impoundment Control Act.

On February 25, 1986, we asked the Secretary of Energy to advise us by March 3 when the funds would be released. By letter of March 3, 1986, the General Counsel, Department of Energy informed us that the Department needs to carefully examine certain legal issues before releasing the funds.

Section 1016 of the Act, 2 U.S.C. § 687, authorizes the Comptroller General to institute a civil action in the United States District Court for the District of Columbia to require the release of budget authority that is to be made available pursuant to section 1013(b), 2 U.S.C. § 684(b). Section 1016 also provides that the Comptroller General is to file with the Congress an explanatory statement of the circumstances giving rise to the action contemplated. The Comptroller General may not bring a civil action until the expiration of 25 calendar days of continuous congressional session after the date on which the explanatory statement is filed.

On the basis of the present circumstances, we contemplate bringing a civil action to compel release of the budget authority. Taking into account a scheduled interruption in the congressional session, from March 26 through April 7, the 25-day period of continuous session which under section 1016 of the Act must elapse before we can bring such a suit expires on April 11, 1986.

Charles A. Bowsher
Comptroller General
of the United States

Mr. **Yates**. What are you going to do about it? Are you going to wait until he sues you, or are you going to follow the law?

Mr. **Bauer**. I just testified before the Senate Energy and Natural Resources Committee. The chairman said, "Mr. Bauer, you have five days to answer it." So the department——

Mr. **Yates**. I won't give you five days. I want you to answer it now.

Mr. **Bauer**. That Comptroller General opinion is still undergoing review and assessment; it raises issues and is still being looked at by the department and the administration. Yes, I think the Comptroller General did serve notice back to the Speaker of the House, and the President of the Senate that it is starting the 25-day clock.

RESTART TIME

Mr. **Yates**. If the funds are made available to continue construction of the reserve capacity, how long will it take to begin work again on the various sites?

Mr. **Furiga**. To take our existing sites first, Bryan Mound and Bayou Choctaw, the time to restart the construction at those sites is a matter of days. It is a matter of starting the pumps up again and starting leaching. At Big Hill, if that decision were made prior to July, we are talking about the time from January to a decision date, plus three months. It will take three months to re-solicit those Big Hill procurements. If that decision does not take place until after July, at that point our architect-engineer contract will normally expire. It expires in July. If the architect-engineer is off-site, we will have to re-solicit for a new architect-engineer, and that is a nine-month process. So we are talking elapsed time plus three months up until July; elapsed time plus nine months after July.

Mr. **Yates**. Would you require new budget authority to continue construction up to 750-million barrel capacity?

Mr. **Furiga**. Yes, sir. If you look at the budget before you, I believe there is approximately $1 billion in 1986 out through 1991 to operate and maintain the system in a stand-by mode. Another $400 million will give you a 750-million barrel SPR development.

Mr. **Yates**. You indicated cost of construction has come down since you first went into Big Hill. If you delay more, will the cost continue to come down, in your opinion? Do you have any opinion on that?

Mr. **Furiga**. I do not see the whole service industry recovering to that extent. Yes, I have been asked the question before, will it cost more to complete Big Hill by delaying it? And the answer is yes, if purely due to inflation. But, again, it is the near-term outlays. To continue Big Hill on schedule, it is that $150 million in construction that you would have to be spending in the near-term.

STANDBY ACTIVITIES

Mr. **Yates**. Have there been any expenses in bringing the operation to a stand-by position?

Mr. **Furiga**. There will be minor expenses only at Big Hill. West Hackberry and Bryan Mound are operational sites. We are talking in the neighborhood of $1 million to do some things at Big Hill we wouldn't otherwise have done at this time.

Mr. YATES. What about the question of warranties on equipment purchased for Big Hill?

Mr. FURIGA. I understand there have been statements made if we delay the completion of Big Hill for some time, the warranty on the equipment would expire. That doesn't bother me. As a program manager, the project has, I feel, very sound maintenance programs in place. If those maintenance programs are pursued and carried out the way they are intended to be, I don't see the warranty situation having adverse impact.

Mr. YATES. If the committee were to provide the funds to continue construction, how much capacity would be available by the end of fiscal year 1986?

Mr. FURIGA. If we had continued throughout the year, it would have been something like 545 million barrels' capacity at the end of September. Time has elapsed since January. I would estimate in the neighborhood of 530 million barrels of capacity if the re-start were to take place instantaneously.

Mr. YATES. When are you going to complete the 10-million barrel cavern on Bayou Choctaw?

Mr. FURIGA. That will be in fiscal year 1987.

OIL ACQUISITION

Mr. YATES. When are you going to stop buying oil for fiscal year 1986? Have you stopped buying oil?

Mr. FURIGA. No, sir. We have an existing contract, which is 50,000 barrels a day, from Pemex. When we reach 500 million barrels, the plan is now to suspend that contract.

Mr. YATES. How far away from that are you?

Mr. FURIGA. We will reach the 500 million barrels in late May this year.

Mr. YATES. If you suspend purchases, what happens to your support personnel?

Mr. FURIGA. Sir, we have not utilized the Defense Fuels Supply Center for buying oil for some time now. We have been relying on the Pemex contract. The Pemex contract satisfies our requirements, and you are not going to beat the price.

Mr. YATES. Is that price better than the Venezuelan price?

Mr. FURIGA. You would have to look to quality of crude. Venezuela sells quite a bit of heavy crude, which is not suitable for storage in SPR. The Mexican crude which we take is their Isthmus, which is a light crude, comparable to Arab light. It is a very good crude.

Mr. YATES. Is this what they call a sweet?

Mr. FURIGA. Some people call it a sweet. I call it sour, because of its sulfur content, but it is a light sour.

Mr. YATES. Any penalties for not meeting purchases from Mexico?

Mr. FURIGA. There are ample provisions in our contract that would allow us to suspend without penalty. For example, the contract is subject to available funds, standard claus.

Mr. YATES. There are no penalties, then, that you are aware of?

Mr. FURIGA. No, sir.

Mr. **YATES**. Do you know whether or not prices are resulting in increased imports of oil?

Mr. **BAUER**. Now they are about 9.9 percent. I think last year they were 7.4 percent. So there is some increase, like a two percent increase. I will provide that for the record.

[The information follows:]

IMPACT OF LOWERING OIL PRICES ON U.S. OIL IMPORTS FROM THE MIDDLE EAST

Over the month-long period beginning in mid-January when world oil prices began their precipitous decline, there was a slight expansion in U.S. crude oil acquisitions from the Middle East. However, this expansion was well within the normal month-to-month variations in these shipments experienced in the past.

Mr. **YATES**. What is the current distribution capacity of the system by storage group?

Mr. **FURIGA**. I will provide it for the record by group.

[The information follows:]

SPR DISTRIBUTION CAPACITY

Due to limitations of private crude oil logistics systems and variations in regional crude oil demand patterns, the current initial 90-day sustainable average daily distribution rate by SPR storage group is as follows:

	Thousand barrels per day
Seaway Group	390
Texoma Group	1,200
Capline Group	730
Total	2,320

DISTRIBUTION ENHANCEMENTS

Mr. **FURIGA**. It is a total distribution capacity of 2.3 million barrels a day. Our drawdown is 3.3 million barrels per day. Physically distributed through the commercial system, it is 2.3, and when our distribution enhancements are finished, it will be 3.1 million barrels a day for a 500 million barrel reserve.

Mr. **YATES**. Suppose it was 750 million.

Mr. **FURIGA**. We would look at alternatives to bring our drawdown capability, or I should say, to bring our distribution capability in line with our drawdown capability.

Mr. **YATES**. What is the cost of those enhancements?

Mr. **FURIGA**. The ones we currently have approved by Congress, I think the number is something like $60 to $70 million, Mr. Chairman.

Mr. **YATES**. Is that in accord with your original estimates?

Mr. **FURIGA**. I believe it is. We do have one additional enhancement in the 1987 budget which we have identified as $4.4 million to enhance the system over at St. James, Louisiana.

Mr. **YATES**. The committee asked you to study the distribution enhancements. Was that study ever completed?

Mr. **FURIGA**. Yes, sir. It has been submitted to the Congress.

Mr. **YATES**. Okay. When will each additional enhancement need to begin, assuming that you still have a 750 million barrel goal?

Mr. **FURIGA**. If we were to proceed to a 750 million barrel system at the present time, the next distribution enhancement, which will have to be seriously looked at, will be that involved with the completion of Big Hill. I emphasize completion. You don't need enhancement until Big Hill has quite a bit of oil in it. We are talking 1989, 1990. That is the timeframe it should be on the road.

TEST DRAWDOWN

Mr. **Yates**. You held a test of the oil. Was it a success?

Mr. **Bauer**. Yes, it was.

Mr. **Yates**. Did it show a reasonable drawdown capability?

Mr. **Furiga**. Yes.

Mr. **Bauer**. We are going to submit a report April 28th describing the entire test, what it cost us to do the test and how successful it was, and all that.

Mr. **Yates**. Can you tell the committee whether you encountered any problems?

Mr. **Furiga**. Very minor problems, Mr. Chairman, and they were primarily in the internal communications area, some computer programs, things like filling the IFBs out. We found that a lot of people who wanted copies of the proposal gave us post office box numbers. We wanted to use express mail, and express mail does not deliver to post office box numbers. It was that kind of fine tuning which we discovered.

FIRE AND SAFETY SYSTEMS

Mr. **Yates**. When did you receive recommendations to provide deluge sprinkler systems at the various sites?

Mr. **Furiga**. That was the result of a study that was done by the Industrial Risk Insurers to meet the upgraded Department of Energy fire and safety standards, and it was that survey that identified areas at the SPR where we had to improve the systems to raise them to the new fire standards, and the deluge systems were one of the items found. I believe that was 1983 sir.

Mr. **Yates**. Well, now, three of those systems have not yet been funded, have they?

Mr. **Furiga**. No. We prioritized all of the recommendations, and I believe our capital improvement budget, which this type of improvement falls under, has remained fairly steady throughout the budget process, about $20 million a year. So, it is a matter of prioritizing the sites and systems.

Mr. **Yates**. What is the cost of the system for the Weeks Island site?

Mr. **Furiga**. I will have to supply that.

[The information follows:]

Cost of the Weeks Island Sprinkler System

Design of the Weeks Island deluge sprinkler system was completed in fiscal year 1985 at a cost of $172 thousand. The currently estimated cost of constructing the system is about $1 million.

Mr. **Yates**. Why are you delaying it until 1988?

Mr. **Furiga**. As I said, it was a matter of prioritizing things. Weeks Island is not a conventional site. It is a mine. It is not the same as the other sites. The same fire risks, if I can characterize it that way, aren't associated with storage at Weeks Island as they would be on a conventional solution mined site as the others all are.

SECURITY SYSTEM

Mr. **Yates**. Is the entire security system in place?

Mr. **Furiga**. The physical protection system is operational with the exception of Big Hill, which is not completed yet.

Mr. **Yates**. How often do you test adequacy of the system?

Mr. **Furiga**. I would have to provide for the record how often routine tests are carried out, but it is operational 24 hours a day. The sites are guarded 24 hours a day. In that respect, they are operational 24 hours a day.

[The information follows:]

Testing Strategic Petroleum Reserve Security System

The SPR's physical protection systems are tested on a fixed schedule. Site infrared microwave systems and motion detectors are tested daily. All site and cavern intrusion detection fences are thoroughly checked and tested by a security team on a quarterly basis.

Testing the adequacy of the SPR security protection services is a continuous activity consisting of quarterly force-on-force drills involving SPR security personnel and, on occasion, local law enforcement agencies, and bi-annual force-on-force security exercises involving the U.S. Army Aggressor Forces. These latter exercises involve SPR security personnel supported by U.S. Army, U.S. Coast Guard, U.S. Air Force, FBI, Adjutant General of Texas, Office of Emergency Preparedness-Louisiana FEMA, Louisiana Army National Guard, State Police of Louisiana and Texas, Parrish and County Sheriffs, and local police forces, where available, in simulated hostile assaults on SPR sites.

Mr. **Yates**. Are you going to test it further during fiscal year 1987?

Mr. **Furiga**. Yes, it is a routine matter of security.

Mr. **Yates**. How about operational capability?

Mr. **Furiga**. We plan to continue the practice of physically testing the drawdown systems at the storage sites.

INTEGRITY OF THE CAVERNS

Mr. **Yates**. Have you found any significant changes in the salt caverns since they were first filled?

Mr. **Furiga**. No, sir.

Mr. **Yates**. Nothing persuades you to change your mind about the salt caverns?

Mr. **Furiga**. People who decided to use salt cavern storage were quite wise.

Mr. **Yates**. Do you have to recertify the caverns?

Mr. **Furiga**. We do certify them for oil storage, once every five years, I am told, sir.

Mr. **Yates**. How long will the wells drilled at Big Hill remain in tact if they are not leached into caverns?

Mr. **Furiga**. They do have that phenomenon called creep. It is a massive structure, and there is a tendency for the dome to creep over time. If you drill a hole in it, you are upsetting Mother Nature.

Mr. **Yates**. What is creep?

Mr. **Furiga**. Creep is what happens when the pressure forces the dome to seal itself. If man does something to that dome, the reaction is for the dome to seal that cavity. This is over a long period of time that this occurs. This is why our 10-million barrel caverns have more than one million-barrel sumps in the bottom. That is to account for 20 years of this creep, as it is called.

As far as the wells at Big Hill, I think the current studies we have as part of our maintenance program, we would intend to inject small amounts of water down into that well so that we don't have to worry about the creep. That can be done by trucks, you don't need a pipeline.

BARTER

Mr. **Yates**. Are you exchanging agriculture products for oil?

Mr. **Bauer**. We are not, Mr. Chairman.

AEROSPACE CONTRACT

Mr. **Yates**. What functions does Aerospace perform under contract to you?

Mr. **Furiga**. Aerospace has been, for some time, our systems engineering contract, and they provide us with, if I may say, a third party opinion on system design, integration, things like that. They are a highly professional company.

SANDIA

Mr. **Yates**. What about Sandia?

Mr. **Furiga**. Sandia provides us with geotechnical advice for Big Hill. They get analysis from the salt dome to describe for us the structure, its characteristics. Sandia also takes part in recertification of caverns. They continually look at the geology of the salt domes.

Mr. **Yates**. Where is Big Hill located, in Texas?

Mr. **Furiga**. Southwest of Beaumont, near a little town called Winnie, Texas.

Mr. **Yates**. Is that anywhere near the Gulf? How close to the Gulf?

Mr. **Furiga**. Big Hill is a stone's throw from the intercoastal waterway. It is not far.

Mr. **Yates**. Is it near Corpus Christi?

Mr. **Furiga**. No. Bryan Mound is between Big Hill and Corpus Christi. Big Hill is in the triangle of Beaumont, Nederland, and that area. Winnie is the closest populated area.

Mr. **Yates**. Anything else you want to say before we turn to the Naval Petroleum Reserves?

Mr. **Bauer**. No, Mr. Chairman.

Mr. **Yates**. Thank you very much.

NAVAL PETROLEUM AND OIL SHALE RESERVES

Now, we will turn to Naval Petroleum and Oil Shale Reserves. Captain, do you want to come up to the table? Inasmuch as you are the person in charge—do you have a statement for the record?

Captain **Rumbold**. No.

Mr. **Yates**. As I recall, you have a figure of $3.6 billion as being the price you can get for the reserves. Is that correct?

Mr. **Bauer**. That is right, Mr. Chairman.

Mr. **Yates**. How did you arrive at the figure?

Mr. **Bauer**. One of the ways of calculating that is the recoverable reserves, from NPR-1, is like 713 million barrels, for which we own 78 percent, so that is like 556 million barrels. NPR-3 is in excess of——

Mr. **Yates**. 516——

Mr. **Bauer**. 556 million barrels. I think NPR-3 is about 5.3 million barrels, and when oil companies buy, one of the things you can do is go to the Oil and Gas Journal and see what they are paying today for an oilfield. When we did the budget at that time, approximately $5.76 a barrel is what an oil company was paying for a proven reserve.

And so doing it on that basis, the calculation was one of the ways of doing it. We took a look at the amount of recoverable oil and the gas and all the liquid products, and that was something else that led to the bracket of $3-5 billion.

Mr. **Yates**. What was the price per barrel to arrive at this?

Mr. **Bauer**. I think $5.76.

Mr. **Yates**. $5.76?

Mr. **Bauer**. $5.76.

Mr. **Yates**. How long do you anticipate the reserve to be productive?

Mr. **Bauer**. The five-year plan, the last time I saw it, dated September, I think it was to the year 2006, the expenses equal revenues for NPR-1. The others, NPR-3 you have to count on EOR.

Mr. **Yates**. Do you foresee an annual decline of production for NPR-1?

Mr. **Bauer**. Yes.

Mr. **Yates**. Why?

Captain **Rumbold**. It is a traditional curve.

Mr. **Yates**. Has that curve been changed since it was originally established? Is there any reason to believe you may find more oil there than you anticipate?

Mr. **Furiga**. Based on this five-year plan Mr. Bauer mentioned, within the available technology, it is an old oilfield. It is an oil-producing area in that part of California. I don't think we anticipate any major new finds that would alter that curve significantly.

Mr. **Yates**. What kind of decline do you anticipate for NPR-3 in oil production annually?

Mr. **Furiga**. NPR-3 is a much, much smaller oilfield. The production on that is flat.

Captain **Rumbold**. Around 300,000 barrels.

Mr. **Yates**. How long is it going to last do you think?

Mr. **Bauer**. How long is it going to last?

Mr. **Furiga**. We will provide it for the record.

[The information follows:]

CONTINUED ECONOMIC PRODUCTION AT NPR NO. 3

As of October 1985, the total estimated proven recoverable reserves at NPR No. 3 based on primary and secondary recovery methods were 5.3 million barrels. Infill drilling and enhanced oil recovery could result in an additional 5 million barrels of recoverable reserves. The production forecast for fiscal year 1986 is 1.1 million barrels. Based on this information, NPR No. 3 can continue to produce for 10 to 15 years.

Operations are set at a level that is economically consistent with the price of oil, lifting costs, and other economic factors. When low oil prices exist, operations are trimmed to allow for the more economically viable operations. With increasing oil prices, operations that were previously marginal become economical, resulting in increased oil revenues that more than offset the associated increase in operating costs.

Enhanced oil recovery projects are independently analyzed from a technical and economic standpoint. In order for expansion to take place, an enhanced oil recovery process must show higher positive net present value than any alternative production strategy.

ENHANCED OIL RECOVERY

Mr. **Furiga**. The life of NPR-3 would depend to a great degree on future expenditures for enhanced oil recovery.

Mr. **Yates**. When are you going to ask for enhanced recovery funds?

Mr. **Bauer**. There is money provided in the fiscal year 1986 budget, and that is for NPR-3 for the Shannon Zone to do in-situ EOR, Polymer EOR and steam flooding. In the fall of this year, we will make a decision as to which of those EOR projects to use. There is money in the fiscal year 1987 budget request to pursue those.

SALE OF NPR-1 AND NPR-3

Mr. **Yates**. Has a request been sent to the Congress for legislation to authorize the sale?

Mr. **Bauer**. No, it has not.

Mr. **Yates**. Is it going to be sent up, do you know?

Mr. **Bauer**. Yes, it is.

Mr. **Yates**. To what committee, do you know?

Mr. **Bauer**. I do not know.

Mr. **Yates**. Is it Interior or Energy?

Mr. **Bauer**. I would assume it would be——

Mr. **Furiga**. Armed Services.

Mr. **Bauer**. I think it would be Armed Services. I think out of courtesy, it will go to several committees.

Mr. **Yates**. Does the Government have any liability if the contract with the contractor for NPR-1 is canceled?

Mr. **Bauer**. That has the standard termination for convenience clause in it.

Mr. **Yates**. You don't know what the costs are likely to be if it is canceled?

Mr. **Bauer**. I don't think there will be any costs for that one. If there is, we will provide that for the record.

[The information follows:]

Government Liability in Sale of NPR No. 1

The Department of Energy Acquisition Regulations (DEAR 970.5204-45) provides for the termination of the contractor, "whenever, for any reason, the contracting officer shall determine any such termination is in the best interest of the Government." Liabilities of the Government under this clause extend to: all expenditures made in accordance with and allowable under the clause entitled "Allowable Costs and Fee" not previously so allowed or otherwise credited for work performed prior to the effective date of termination; the costs of settling and paying claims arising out of termination of work under orders, subcontractors and commitments; the reasonable costs of settlement, including accounting, legal, clerical and other expenses reasonably necessary; and, a fixed fee in an amount to be agreed upon as a compensation for services in closing out the work under the contract after the effective date of termination.

NPR-1

Mr. **Yates**. What price are you currently getting for oil for NPR-1?

Mr. **Furiga**. The new contracts were just awarded. The posted price, and I believe the average discount is something like $4.40 a barrel.

Mr. **Yates**. How much do you get per barrel?

Mr. **Furiga**. So the posted price of that, I think, is $21 a barrel. So that oil is now at $16.50——

Captain **Rumbold**. Up until the first of April, the discount average of the top three quotes the price at—the first of April, it goes to $4.40.

Mr. **Bauer**. That will still result in selling the oil at $15 or $16 a barrel.

Mr. **Yates**. When will the deep exploratory well be completed?

Mr. **Bauer**. In 1987. Because we are about half way down.

Mr. **Yates**. Are you going to do any other exploratory drilling?

Captain **Rumbold**. We have one well——

Mr. **Bauer**. In NPR-1.

Mr. **Yates**. How well is your new operating contractor doing?

Mr. **Bauer**. Very well, Mr. Chairman.

Mr. **Yates**. On what do you base that?

Mr. **Bauer**. Based upon the ease of transition from the other contractor that we had to this one, and their performance, the quality of their products that we are getting, and the fact that they are cooperating and really taking a real, hard look at a lot of things that we need to be taking a look at at this time.

Mr. **Yates**. When are you going to be in a position to recommend enhanced oil recovery?

Mr. **Bauer**. NPR-3 will be the fall of this year.

Mr. **Yates**. What about one?

Mr. **Bauer**. On the Tulare Zone, we stopped the cyclic steam. That was known as the Huff and Puff. The Shannon Zone steam flooding will be this summer.

Mr. **Yates**. What is the status of the recommendation about billing Chevron for overrun expenses?

Mr. **Furiga**. We are in the process right now of responding to the Inspector General who put that report out.

NPR-3

Mr. **Yates**. When are you going to be in a position to recommend the full-scale EOR project for NPR-3?

Mr. **Furiga**. This fall, Mr. Chairman.

Mr. **Yates**. Do you anticipate there will be any great interest in purchasing a small field like NPR-3?

Mr. **Furiga**. There are a number of local refiners who could utilize that oil.

Mr. **Yates**. Do you have a very good relationship with them now?

Mr. **Furiga**. Yes, sir.

Mr. **Yates**. If it isn't sold, that will continue, I assume?

Mr. **Furiga**. If the NPR-3 is not sold, the assumption is it will continue production.

Mr. **Yates**. How realistic are your proposed reductions in operator fees for 1987?

Mr. **Furiga**. If we are talking about NPR-3, we consider they are very realistic.

Mr. **Yates**. Are you going to increase the scope of the contract in fiscal year 1987?

Mr. **Furiga**. Yes. The new contract will include the operation and maintenance of the oil shale reserves.

Mr. **Yates**. Well, why, then, will you get a reduced fee?

Mr. **Furiga**. Due to operating efficiencies.

NOSR-3

Mr. **Yates**. Let's talk about the oil shale reserve. What about oil shale reserve 3 in Colorado, are you protecting the gas resources?

Mr. **Bauer**. Yes, we are.

Mr. **Yates**. How are you doing that?

Mr. **Bauer**. We are doing that by putting in what they call the 2-6-6 plan, to prevent drainage of natural gas to commercial wells. And I think it was September of last year when the President signed operating agreements for us to drill those wells, and they will be jointly owned by the Government and private companies.

The reason I didn't answer those NPR-3 questions, I am the selection official for the replacement contractor, so I am staying out of it.

Mr. **Yates**. How many have been completed?

Mr. **Bauer**. Two have been drilled.

Mr. **Yates**. You have got to speak up for the reporter. What is the total cost for the program? Put that into the record.

[The information follows:]

THE GAS PROTECTION PROGRAM AT NOSR NO. 3—PROJECTED EXPENDITURES AND REVENUES

[In millions of dollars]

Fiscal year	Expenditures	Revenues
1985	1.4	0
1986	3.9	1.0
1987	5.1	4.0
1988	1.2	8.0
1989	.2	6.2
1990	.2	4.9

The revenues are based on production for 3 months in fiscal year 1986 from the first two Mesaverde wells. Fiscal year 1987 production is based on estimated production and completion dates of the wells to be drilled in fiscal year 1987. Fiscal year 1988 production represents all 14 wells on production. Revenues are calculated based on the currently expected spot price of natural gas in Colorado of about $2.00 per thousand cubic feet. This projection is lower than that contained in the fiscal year 1987 budget justification because of the reduced oil and gas prices being experienced in the current marketplace. Revenues are expected to decline at a rate of 13% a year after 1990.

Mr. **Yates**. What kind of plan do you have to ascertain whether additional wells will be needed?

Mr. **Bauer**. As best as I recall, the July 1983 plan that was sent to the House and Senate Armed Services Committee, pursuant to

10 of the United States Code, concluded we needed 14 wells and after those 14 wells were in, and we did the invitation for bid to sell the gas, we would do a review and assessment.

ANVIL POINTS CLEANUP

Mr. **Yates**. All right. How much will it cost to get rid of this shale pile at Anvil Points?

Mr. **Bauer**. We have finally cleaned up everything at Anvil Points.

Mr. **Yates**. What did it cost?

Mr. **Bauer**. We reprogrammed $4 million, and right now we are reclaiming the land on this shale pile. It will remain, and there will not be an environmental hazard, and we will monitor it.

FEDERAL INSPECTOR FOR ALASKA NATURAL GAS TRANSPORTATION SYSTEM

Mr. **Yates**. Okay. Now we have the Federal Inspector for the Alaska Gas Pipeline.

Has the Federal Inspector retired?

Mr. **Berman**. Yes, he has, Mr. Chairman, in December 1985.

Mr. **Yates**. Is he going to be replaced?

Mr. **Berman**. That is the plan. There is still the plan to have an existing official within the Department of Energy serve his existing function plus the Federal Inspector duties.

Mr. **Yates**. Do you still have a skeleton organization?

Mr. **Berman**. Yes, we have. We have reduced considerably since last year—our administrative arrangements with the Department of Energy have now been completed. We are down to five full-time staff members, three of whom are on detail to other agencies during the transition period. We have an ability to get them back on a day-to-day basis as we need them.

We also have one part-time retired annuitant in Alaska and we are down now to that individual working one day a week. By the end of this year, we will be down to two employees.

Mr. **Yates**. Who are the remaining sponsors?

Mr. **Berman**. The sponsors remain the same as last year—five transmission companies and the three producers. I can submit that for the record.

[The information follows:]

Sponsors of the Alaska Natural Gas Transportation System

The sponsors of the Alaska Natural Gas Transportation System are comprised of the following five transmission companies and three major oil producers, as follows:

TRANSMISSION COMPANIES

Partner	*Parent*
Northwest Alaskan Pipeline Company.	The Williams Companies.
United Alaska Fuels Corporation.	United Gas Pipe Line Company.
Calaska Energy Company.	Pacific Gas & Electric Company.
Tetco Four, Inc.	Texas Eastern Transmission Corp.
TransCanada Pipeline Alaska, Ltd.	TransCanada Pipeline Alaska, Ltd.

Producers

Atlantic Richfield Company (ARCO).
Exxon Company, USA.
Standard Oil Company of Ohio (Sohio).

Mr. Yates. Are they considering re-starting?

Mr. Berman. They are continuing their individual activities for both studying—this is the individual members primarily, rather than the partnerships, themselves. They are exploring the cost of this pipeline, and are looking at enhancements to design and reductions in cost. The producers are also looking at other possible alternatives. They are certainly still interested in starting this project when the market allows them to do so.

As a matter of fact, Foothills Pipeline Limited, from Yukon, Canada, has applied to join the U.S. partnership. That is still being negotiated.

Mr. Yates. Thank you very much, gentlemen. Do you have anything further you want to say?

Mr. Bauer. No, thank you, and have a good day, Mr. Chairman.

[Whereupon, at 2:00 p.m., the subcommittee was adjourned subject to the call of the chair.]

[Questions and answers submitted for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Construction Delays Due to Deferrals

Question: What has been the overall delay in construction schedules at each SPR site because of decisions to halt construction twice?

Answer: As of April 1, 1986, development of the surface facilities for the last cavern at the Bayou Choctaw site will have been delayed a total of approximately 18 months. Development of Cavern 17, the exchange cavern, has not been delayed. As of April 1, 1986, the Big Hill site construction will have been delayed a total of approximately 21 months. Surface facilities construction at all other SPR sites has continued without delay.

Strategic Petroleum Reserve Fiscal Year 1987 Budget Authority Requirements

Question: What would be the new budget authority required in fiscal year 1987 to continue construction up to a 750 million-barrel capacity as originally intended by the Congress?

Answer: Based on cost estimates developed in the fall of 1985, and assuming an immediate restart of development at any uncompleted sites, the Department estimates that the new budget authority required in fiscal year 1987 would be approximately $196 million. These fiscal year 1985 cost estimates are currently under review to determine revisions that may be appropriate based on more recent data.

Cost of Construction Delays

Question: What do you estimate the added cost of system construction to be because of delays?

Answer: Using the Administration's current projections of inflation rates for fiscal years after fiscal year 1985, the costs to complete delayed construction would increase as follows:

1-year delay	+ 3.2%
2-year delay	+ 7.4%
3-year delay	+11.6%
4-year delay	+15.4%
5-year delay	+18.8%
6-year delay	+21.5%

There are uncertainties inherent in these estimates because price levels in oil field construction services may not follow general rates of inflation. In recent years, for example, Strategic Petroleum Reserve construction costs have declined.

Standby Transition Costs

Question: What have been the expenses in bringing the Reserve to a standby operation?

Answer: The Strategic Petroleum Reserve will incur a cost of approximately $420,000 to place the Big Hill storage site in a standby operational mode. These costs are for temporary site fencing, wellhead cathodic protection, temporary terminations of electrical and instrumentation connections, and site and wellpad seeding.

At Bryan Mound and West Hackberry where all construction has been completed, except for cavern leaching, there are no specifically identifiable costs to place these sites in a standby operational mode.

SPR Equipment Maintenance at Big Hill

Question: The January, 1986 GAO status report on the Reserve says that warranties on all equipment purchased for Big Hill will expire before it is installed.

What would the cost of extending the warranties be?

Answer: Based on informal discussions with equipment vendors, the cost of extending warranties on equipment delivered or soon to be delivered to the Big Hill site should be extremely high and in some pump cases equal to the original cost of the pump.

Question: What alternatives to that are there and what would their cost be?

Answer: There are no alternatives to extending the warranties on the equipment except for the Government to assume the risk of equipment failure once the equipment is placed in full operation. If the equipment is free of manufacturer defects, the Government's cost of assuming the risk will be zero. This cannot be determined until the equipment is placed in operation.

Question: What do you plan to do?

Answer: All equipment delivered to date has been installed and will be periodically serviced and maintained according to the manufacturer's warrantee handbooks. All pumps and motors will be rotated and bearings will be periodically pulled, checked and lubricated. Ten pumps due for delivery in the near future, however, will be stored in the warehouse where the same periodic servicing and maintenance will be performed.

Future Capacity of Strategic Petroleum Reserve

Question: Based on beginning immediately to construct capacity how much will be available, by site, in each future fiscal year until the 750 million barrel capacity is reached.

Answer: Assuming the Strategic Petroleum Reserve resumes development by April 1, 1986, the Reserve would have the following storage capacity in millions of barrels:

	End of Fiscal Year					
Site	1986	1987	1988	1989	1990	1991
Bryan Mound	212	226	226	226	226	226
West Hackberry	166	195	219	219	219	219
Big Hill	0	0	0	20	80	140
Sulphur Mines	26	26	26	26	26	26
Bayou Choctaw	46	56	56	56	66	66
Weeks Island	73	73	73	73	73	73
Total	523	576	600	620	690	750

Strategic Petroleum Reserve Oil Acquisition

Question: Projections by the EIA show that by 1995, low oil prices could result in steeply increased imports. Even by 1990 they could be close to 8 million barrels per day. Ninety day supply in the Reserve at that point would be 750 million barrels.

Do you agree that low prices will produce more imports?

Answer: It is true that many energy forecasts predict that the reductions in oil prices over the past several years could stimulate an increase in U.S. oil imports during the 1990's. However, it should be noted that such forecasts must be considered highly uncertain because of the large number of economic, oil market, and technological assumptions required. Furthermore, the desirability of further oil fill for the Reserve is affected not only by quantititive increases in anticipated oil import levels but, more importantly, by the level of risk that foreign oil supplies to the U.S. and our allies might be abruptly curtailed.

Continuation of these temporarily-reduced prices could, in the long run, result in a demand expansion. However, we expect adjustments in the world oil market's supply-demand imbalance to be gradually carried out which will tend to reverse this price decline. The world's oil producers need only to reduce their production by about 7 to 10 percent to eliminate the current excess of production over consumption.

Question: Do you agree that increased imports are apt to come from OPEC countries in the Middle East?

Answer: The proportion of U.S. petroleum imports received from Arab OPEC sources has been falling dramatically since the late 1970's from a high of about 44 percent to its low mark of under 10 percent last year. We do not expect a full reversal of this trend for two reasons:

(1) Although most of the world's excess capacity lies concentrated in the hands of the lowest-cost OPEC producers (half of it with Saudi Arabia alone), our major suppliers will continue to be among the non-OPEC states such as Mexico, United Kingdom, Canada, and Indonesia, and among non-Arab OPEC states such as Nigeria for reasons having to do with existing commercial linkages, bi-lateral trade patterns, and geographical proximity to the U.S. of western hemisphere oil exporting countries.

(2) Because of costly capital improvements made to U.S. refinery plant and equipment over the last decade, this country is now better able than in the past to utilize the lower grade (and cheaper) crude oil available from our western hemisphere suppliers.

Question: Don't you have to begin construction and fill of the Reserve now in order to approach 750 million barrels by 1990?

Answer: Completion of a 750 million-barrel inventory by 1990 would require near-term resumption of storage capacity development.

Question: Why does your statement only refer to near-term circumstances in assessing the Reserve?

Answer: The Administration has not abandoned its long-term goal of completing a 750 million-barrel system. The moratorium policy is thus predicated on near-term considerations.

Question: Isn't the Reserve supposed to provide continuing insurance in the same manner it does now?

Answer: It is our intent to insure that the level of protection provided by the Reserve is adequate to meet changing economic and strategic circumstances. We will continue to review the decision on future development of the reserve as conditions warrant.

Additional Distribution Enhancements Requirements

Question: Based on going forward on construction of a 750 million barrel system, when will each additional enhancement need to begin?

Answer: Resuming SPR development and fill to completion of a 750 million-barrel system would require distribution enhancements in addition to those which are underway or proposed in the current budget submission. Distribution enhancement alternatives have been identified, but specific implementation schedules have not been determined. Specific schedules for enhancements would depend primarily on the fill schedule as opposed to the facilities construction schedule.

Question: What are the enhancements required and what will each cost by fiscal year?

Answer: Additional distribution enhancement alternatives to those proposed in the fiscal year 1987 budget request, which have been identified, are as follows:

- Within the SPR Texoma group:
  - Construction of a pipeline from the West Hackberry site to the Lake Charles, Louisiana, area;
  - Modifications to two (2) commercial marine terminals in Lake Charles for outloading SPR crude oil;
  - Connections to two (2) commercial marine terminals in the Beaumont/Port Arthur, Texas area; and
  - Construction of two (2) additional tanker docks in Beaumont/Port Arthur.
- Within the SPR Capline group:
  - Connections to additional docks in the St. James, Louisiana area near the DOE's marine terminal.

The budgetary requirements for the above enhancements have not been determined.

Question: Are these some enhancements you would not recommend even if you were to construct a full 750 million barrel system?

Answer: Within the group of enhancements identified above, all are considered feasible and cost-effective, except for the construction of two additional docks in Beaumont/Port Arthur for the Texoma group. New docks are estimated to cost on the order of $15 to $20 million each, relatively expensive for the benefits to be derived. Since these additional docks would be required only upon the completion of the SPR's Big Hill, Texas site, a decision to pursue this enhancement alternative is not necessary at this time. Therefore, the Department will continue to analyze refinery trends and private sector plans and activities with the objective of identifying lower-cost alternatives by the time the enhancements may be required.

Strategic Petroleum Reserve - Separation of Personnel

Question: Have any personnel been separated because of your deferral of funds?

Answer: There have been no separations of SPR personnel as a result of the deferral. The Department expects to be able to rely on normal attrition as the means for conforming employment to planned moratorium staffing levels.

NPR No. 1 Production

Question: What kind of annual decline in production of oil do you project for NPR No. 1? Gas? — Is that reflected in the September 1985 long range plan?

Answer: The table below shows the Government's share of production of oil and gas available for sale and associated decline rates. These numbers are reflected in the fiscal year 1987 budget and are therefore more current than the September 1985 long range plan.

Table

	Oil (Barrels of Oil Per Day)	% Decline	Gas (Thousand Cubic Feet Per Day)	% Decline
1987	88,061		149,841	
		14.4%		3.2%
1988	75,369		145,001	
		14.0%		4.6%
1989	64,826		138,296	
		12.0%		6.1%
1990	57,015		129,904	
		10.3%		3.4%
1991	51,158		125,424	

Sale of the Naval Petroleum Reserves

Question: When is it expected that legislation will be submitted to request authorization for the sale?

Answer: It is expected, that legislation to authorize the sale of Naval Petroleum Reserves No. 1 and No. 3 will be submitted as soon as possible before the end of fiscal year 1986.

Question: What Committees have jurisdiction over the legislation?

Answer: The assignment of proposed legislation to specific committees, or subcommittees, in the House of Representatives is made by the House Parliamentarian and generally reflected in the involvement of counterpart Senate committees and subcommittees. Experience suggests that the following committees could be involved:

- Senate Armed Services Committee
  - o Preparedness Subcommittee
- House Armed Services Committee
  - o Investigations Subcommittee
- Senate Energy Committee
  - o Natural Resources Development and Production Subcommittee
- House Energy Committee
  - o Fossil and Synthetic Fuels Subcommittee
- House and Senate Appropriations Committees
  - o Interior and Related Agencies Subcommittee

Question: What functions in this account would be expected to remain in the Department's control?

Answer: The administration is proposing the sale of Naval Petroleum Reserve No. 1 in California and Naval Petroleum Reserve No. 3 in Wyoming. The three Naval Oil Shale Reserves and the leases on Naval Petroleum Reserve No. 2 are expected to remain under deparmental control.

Contract Provisions for Sale of NPR No. 3

Question: What provisions are being made, if any, to cover the contingency of a sale of NPR No. 3 when a new contract is signed to operate that reserve starting in October?

Answer: No provisions are necessary beyond the inclusion of a standard clause in the Department of Energy Acquisition Regulations (DEAR 970.5204-45), which provides for the termination of the contractor at the convenience of the Government, "whenever, for any reason, the contracting officer shall determine any such termination is in the best interest of the Government."

Agreement With Kern County Fire Department

Question: Do you now have a working agreement with the Kern County Fire Department?

Answer: The Kern County Fire Department and Naval Petroleum Reserves in California have a working agreement to provide comprehensive fire protection services as required. A contract for fire protection services is currently being negotiated to allow reimbursement for the services Naval Petroleum Reserves in California receives.

Permanent Office Space at NPR No. 1

Question: You were previously expecting to add permanent office space at NPR No. 1. What are your current plans?

Answer: A study by DOE in 1984 showed that it was more economical to build on Elk Hills than lease office space in Bakersfield, and formal DOE approval was received in January 1985 to build. Subsequent to that approval, a new Operating Contractor was selected for NPR No. 1, Bechtel Petroleum Operations, Inc. (BPOI). The new Operator revalidated space requirements, in December 1985, and BPOI submitted a conceptual design.

The BPOI study considered office space for all workers on Elk Hills. Conceptual designs were prepared for constructing a pre-engineered administration building at 11G and other general plant facilities at NPR No. 1 (new 35R administration and security buildings) and for remodeling the present administration buildings at the 11G and 35R locations. In addition, a new industrial building at 11G was proposed for future construction (1989) to house light industrial functions (drafting, laboratories, etc.) shifted from 36S.

The conceptual design study has been reviewed by the Department and Chevron. We expect that the contractor will be directed in the near future to start the architectural and engineering work using funds already appropriated in the fiscal year 1984 budget.

Office of Inspector General Report

Question: A January 13, 1986, Office of Inspector General report says you should bill Chevron for certain overhead expenses of the Department, amounting to about $3.4 million a year since 1975.

What is the status of this recommendation?

Answer: The proposed Departmental position is currently under review by senior management.

Question: Why do you disagree?

Answer: The Department believes this recommendation has been implemented to the extent possible. That is, it has been recognized that certain Government employees at the Naval Petroleum Reserves periodically perform work that directly supports the Unit, i.e., the partnership between the Government and Chevron. The cost for such work directly supporting the Unit is presently shared by the partners. However, when those employees are not supporting the Unit, their only duties are to protect the Government's interest. The other DOE staff at the Naval Petroleum Reserves in California are there for the sole purpose of protecting the Government interest including the administration of the Naval Petroleum Reserves in California's Management and Operating Contract, and the sales contracts. Headquarters staff who periodically visit Naval Petroleum Reserves in California do so in support of protecting the Government's interest.

The Department believes the Government has sole responsibility for protecting the interest of the taxpayers; therefore, the cost of doing so is the sole responsibility of the Government. Similarily, Chevron management, not Federal employees, is responsible for protecting the interest of the Chevron stockholders. Chevron recognizes that the cost of corporate oversight is a corporate responsibility, and Chevron has never asked the Government to share the cost of protecting Chevron's interest in the Unit.

Anvil Points

Question: What do you plan to do in lieu of disposing of the waste shale pile at Anvil Points? At what estimated cost?

Answer: After extensive studies, DOE has determined that leaving the waste shale pile in place on site will not generate any significant environmental impacts as long as appropriate mitigation measures, such as water runoff diversion berms, are taken. In addition, DOE will implement a water quality monitoring program in the vicinity of the shale pile to periodically verify that this action is not adversely affecting the environment.

There are no costs associated with the action to abandon the waste shale pile in place, other than the costs for implementing the impact mitigation measures. These have already been included in the budget for decommissioning the Anvil Points Facility and constitute only a very small fraction of the overall decommissioning costs. $250 thousand has been included in the fiscal year 1987 budget to construct the wells required for the water monitoring program around the waste shale pile. Annual follow-on costs are estimated to be $50 thousand.

NPR Obligations Between Fiscal Years 1985 and 1986

Question: Please explain the large increase in obligations between fiscal year 1985 and fiscal year 1986 for NPR Nos. 1 and 2 and also for NPR No. 3.

Answer: The large increase in obligations between fiscal year 1985 and fiscal year 1986 for NPR Nos. 1 and 2 reflects both the transition to a new contractor in fiscal year 1985 and the use of uncosted obligated balances carried into fiscal year 1985 from fiscal year 1984. It was determined that the transfer of operations at NPR Nos. 1 and 2 could be accomplished more effectively if the amount of work in progress that had to be transferred to the new contract was minimized, simplifying award fee determinations, the billing process and close-out of the previous contract. This resulted in limiting the previous contractor, in large part, to those activities that could be completed by the end of the contract period. All scheduled work not started or completed was transferred to the new contractor and is planned to be accomplished. In addition, uncosted obligations carried over from fiscal year 1984 were available to fund scheduled activities and ensure a continuity of work. These actions resulted in a low level of obligations in fiscal year 1985. However, with the use of prior year obligations, actual costs incurred in fiscal year 1985 (shown below) are comparable with the budget estimates for fiscal year 1986 and fiscal year 1987 and indicate a fairly stable level of operations.

The increase in obligations at NPR No. 3 from fiscal year 1985 to fiscal year 1986 is attributable to two factors. First, approximately $5.3 million of prior year obligations were used to fund fiscal year 1985 activities. The availability of these funds resulted from rescheduling of the enhanced oil recovery projects and increased efficiencies of operations. Second, increased obligations will result in fiscal year 1986 programmatic increases for development drilling ($1.7 million) which targets the deeper producing zones, and the initiation of three enhanced recovery projects ($3.8 million). As with NPR Nos. 1 and 2, the actual costs incurred in fiscal year 1985 reflect the use of prior year balances and a higher level of activity than indicated by the amount of obligations for fiscal year 1985.

Question: What are costs for the comparable years?

Answer: The following table provides the costs for NPR Nos. 1 and 2 and NPR No. 3 for fiscal year 1985 and fiscal year 1986.

Accrued Costs
(dollars in millions)

	Fiscal Year 1985 (Actual)	Fiscal Year 1986 (Estimate)
NPR Nos. 1 and 2	$ 138.3	$ 145.7
NPR No. 3	23.5	23.0
Total	$ 161.8	$ 168.7

QUESTIONS SUBMITTED BY CONGRESSMAN RALPH REGULA

Moratorium Review

Question: Was the Emergency Preparedness office consulted about the moratorium?

Answer: The Office of Energy Emergencies participated in the review process that considered the moratorium both this year and last year.

Agricultural Barter

Question: The FY 1986 Continuing Resolution permits the Secretary to exchange surplus U.S. Government-owned agricultural commodities for crude oil to fill the Reserve. Under what circumstances would you consider using this authority? Is DOE prepared to do this exchange?

Answer: The Administration has proposed a moratorium on filling the Reserve as a means for avoiding investment of real resources in the Reserve at this time. Since agricultural commodities owned by the Commodity Credit Corporation constitute such resources, the Department does not envision proceeding to implement the barter authorities provided in the fiscal year 1986 Continuing Resolution. The Department has requested that the barter language be deleted in fiscal year 1987.

Restart of Construction and Fill

Question: Once the Reserve is in a standby mode as your budget proposes, how long would it take to restart construction and fill?

Answer: Capacity leaching and oil fill at the Bryan Mound and West Hackberry sites could be resumed within approximately 30 days. Surface construction at the Bayou Choctaw and Big Hill sites could be resumed within approximately 4 to 6 months if the decision to resume construction were made before July 31, 1986.

SPR Staffing

Question: According to your budget you will be down from 152 to 120 FTE's. Why do you need that many to keep in a standby mode?

Answer: In the standby readiness condition, these FTE's continue to have mangement responsibility to assure the operational readiness of the storage sites to deliver oil to the private sector should the President determine that an energy emergency exists. To fulfill this responsibility, sites must be operated and maintained at a high level of operational readiness, oil sales procedures must be maintained and tested, physical system capability to distribute oil to the private sector must be continually evaluated and, as required, modified, and the capability to resume facility development and oil acquisition programs must be retained. These 120 FTE's continue to have the same scope of ongoing program and project responsibility for all activities except the direction of new capacity development and oil acquisition; further staff reductions would severely compromise the Federal capability to assure the adequacy of the SPR standby readiness condition.

The request for 120 FTE's in the fiscal year 1987 budget to manage the Strategic Petroleum Reserve in standby readiness condition can best be compared to 186 FTE's required in fiscal year 1984, the last year full development was proposed by the Administration. The difference between 120 FTE's and 186 FTE's is primarily associated with managing the facility development program. The Strategic Petroleum Reserve will continue to support a Program Office in Washington, D.C., and Project Management Offices in Oak Ridge, Tennessee and New Orleans, Louisiana which direct the ongoing activities at the six storage sites and the Government-owned oil terminal.

Operation Support Budget

Question: Why is operations support up over $1 million if you will be in a standby mode?

Answer: Planned obligations for operations support are $8.5 million in fiscal year 1986 and $9.6 million in fiscal year 1987. The fiscal year 1987 total includes approximately $1 million for the support services of Systematic Management Services, Inc. In fiscal year 1986 this contractor's services are funded in the Management budget. The decision to shift the location of the fiscal year 1987 funding was based on the desire to streamline the financial management structure. As a result of the shift, funding requested for services in the fiscal year 1987 Management budget is approximately $1 million less than requested for fiscal year 1986.

Special Projects

Question: According to your budget special projects include DOD contract administration services. Could you elaborate on this?

Answer: The Department of Defense provides contract administration support as required by Public Law 96-83 in consonance with Office of Federal Procurement Policy Letter 78-4, Field Contract Support Cross-Servicing Program. Services include Defense Contract Audit Services quality assurance support in the areas of construction, operations and maintenance, procurement source inspection, property control, crude oil sampling and analysis and cavern certification.

NPR No. 3 Grazing Fees

Question: I understand grazing is allowed at the NPR. Could you tell me what annual revenue from grazing is? What do you charge per animal unit month (AUM)?

Answer: Grazing leases have been awarded only at NPR No. 3. Annual revenues from these leases totalled $18,678 in fiscal 1983, $5,625 in fiscal year 1984, and $15,669 in fiscal year 1985, and are estimated at $15,000 for both fiscal year 1986 and 1987.

The Bureau of Land Management formula for computing the value of the leases was not used. A competitive negotiated fee was used pursuant to the DOE Order No. 4300.1A, Real Property Management. That Order requires all DOE organizations to obtain "Fair Market Value" for all leases granted. To determine the fair market value for the grazing leases at NPR No. 3, DOE appraised the surrounding areas and ranchers for similar grazing leases in the local area of NPR No. 3.

NPR Nos. 1 and 2

Question: Looking at your Key Activity Summary, routine operation and maintenance activities on Reserves Nos. 1 and 2 are up significantly from fiscal year 1985, from $25.3 million in fiscal year 1985 to an estimated $39 million in fiscal year 1987. The level of activity appears constant. What is the reason for this increase?

Answer: The increase from fiscal year 1985 to fiscal year 1987 for various routine operation and maintenance activities reflects a comparison of funds obligated in fiscal year 1985 versus the budget estimate in fiscal year 1987. This is somewhat misleading in that while the amount budgeted in fiscal year 1985 was actually slightly higher than the budget estimate for fiscal year 1987, the funds obligated were less than the amount planned at the beginning of the year. This was due in large part to the transition to the new contractor, Bechtel Petroleum. It was determined that the transition could be accomplished more effectively if the amount of work in progress that had to be transferred to the new contract was minimized, simplifying award fee determinations, the billing process and close-out of the previous contract. Thus, the previous contractor was limited, in large measure, to activities that could be completed by the end of the contract period. This resulted in a reduction of obligations from the amount planned at the beginning of the year. Scheduled work which was not started or completed was transferred to the new contractor and is planned to be accomplished.

In addition, while the funds obligated for the Operations and Maintenance category at NPR Nos. 1 and 2 were only $61.3 million, costs of $95.7 million were incurred. This reflects the use of prior year obligations to accomplish scheduled work to the extent possible before transition to the new contractor, and represents a stable level of effort in comparison with the fiscal year 1987 budget request.

Question: In fiscal year 1986 you completed 164 major remedial well workover jobs at a cost of $10.9 million. You intend to complete 166, yet the cost is up to $14.4 million. Why this increase?

Answer: The cost of remedial well workover jobs is dependent upon the type of job to be performed. As an example, the cost of stimulation work in the Shallow Oil Zone is estimated at $42,000 per job versus $83,000 in Stevens Zone. Recompletion jobs range from $57,000 for the Shallow Oil Zone to $156,000 for the Stevens Zone. The increase in the fiscal year 1987 request reflects an increase in the number of more expensive remedial jobs (recompletions and artificial lift) planned, from 46 wells in fiscal year 1986 to 72 wells in fiscal year 1987, and the scheduling of increased jobs in the deeper, more expensive Stevens Zone versus the Shallow Oil Zone.

Question: Technical services at Reserves Nos. 1 and 2 will increase in cost from $12 million in fiscal year 1985 to $19.1 million in fiscal year 1987, why is that?

Answer: The $12 million represents actual obligations for this activity in fiscal year 1985. The obligation level was less than planned due to the effort to minimize any difficulties associated with the transition to a new contractor. Available prior year obligations were used in part to fund this activity in fiscal year 1985. Actual costs incurred were $18.6 million in fiscal year 1985, reflecting a fairly stable level of operations in comparison with the fiscal year 1986 and fiscal year 1987 budget estimates.

NPR No. 3

Question: Routine operation and maintenance activities at NPR No. 3 increased in cost from $5.9 million in fiscal year 1985 to $13.1 million in fiscal year 1986. Could you explain that increase?

Answer: The figure of $5.9 million represents the funds obligated for these activities in fiscal year 1985. As stated in the fiscal year 1986 budget, funding for these activities was to be supplemented by prior year obligations which became available due to rescheduling of exhanced oil recovery activities. Actual costs incurred for these activities were $11.9 million in fiscal year 1985. The increase from $11.9 million in fiscal year 1985 to the estimate of $13.1 million in fiscal year 1986 reflects anticipated utility rate increases and the correction of faulty utility metering by Pacific Power and Light Company ($.6 million), and increased operator fee based on estimated contract costs.

Use of NPR Sale Proceeds to Fund SPR Oil Acquisition

Question: What would you think about using the proceeds from the sale of the NPR to fund oil acquisition at the Strategic Petroleum Reserve?

Answer: The Department believes that decisions to acquire oil for the Strategic Petroleum Reserve should remain independent from the sale of the Government's ownership interests in Naval Petroleum Reserves No. 1 and No. 3. Keeping these decisions independent provides more flexibility on the use of public resources. This position is consistent with the 1981 decisions by the Congress and the Administration to avoid earmarking Naval Petroleum Reserve receipts for oil acquisition for the Strategic Petroleum Reserve. In light of the joint efforts of the Administration and the Congress to reduce Federal deficits, we believe that this position remains appropriate.

TUESDAY, FEBRUARY 18, 1986.

U.S. SYNTHETIC FUELS CORPORATION

WITNESSES

CHARLES O. SETHNESS, ASSISTANT SECRETARY OF THE TREASURY, DEPARTMENT OF THE TREASURY

RALPH L. BAYRER, ACTING VICE PRESIDENT FOR PROJECTS, U.S. SYNTHETIC FUELS CORPORATION

RICHARD E. MILLER, ACTING VICE PRESIDENT, ADMINISTRATION AND COMPTROLLER, U.S. SYNTHETIC FUELS CORPORATION

ANDREW TASHMAN, DEPUTY GENERAL COUNSEL

Mr. YATES. The hearing will be in order.

This is the hearing on the budget for fiscal year 1987 for the Synthetic Fuels Corporation, and appearing in support of its budget is Mr. Sethness, Assistant Secretary for Domestic Finance, Department of the Treasury; Mr. Bayrer, the Acting Vice President for Projects of U.S. Synthetic Fuels Corporation; and Richard E. Miller, Acting Vice President, Administration and Comptroller.

Mr. Sethness, your statement may be made a part of the record, and we will be glad to hear what you have to say.

Mr. SETHNESS. I have a very short and sweet message. We have been meeting and discussing and organizing diligently with a view to have the Treasury dispose of the remaining obligations of the Synfuels Corporation as efficiently and inexpensively as possible, and would be happy to answer any questions you have.

[The statement of Mr. Sethness follows:]

February 18, 1986

STATEMENT OF
ASSISTANT SECRETARY OF THE TREASURY
CHARLES O. SETHNESS
BEFORE THE
INTERIOR SUBCOMMITTEE
HOUSE COMMITTEE ON APPROPRIATIONS

Thank you for the opportunity to appear before you today to discuss the termination of the Synthetic Fuels Corporation. I am Charles O. Sethness, Assistant Secretary of the Treasury for Domestic Finance and have been charged by the Secretary and the Under Secretary for Finance with winding down the affairs of the corporation and transferring its continuing monetary and payment obligations as smoothly, quickly, efficiently and inexpensively as possible.

We view the process of liquidating the SynFuels Corporation as having two distinct parts. The first involves closing down the current operations of the corporation by April 18th and clearing up any remaining details as soon thereafter as is practicable. The second concerns ensuring that the ongoing projects that remain financial obligations of the United States Government are monitored properly after April in a manner that protects the Government's interests at the lowest cost. While both are proceeding at the same time, I would like to discuss them separately.

Our immediate attention, due to the short time frame established in the Continuing Resolution, has been focused on closing SynFuels' offices. This involves many discreet projects such as lease terminations for office space and equipment, accounting matters, disposition of library materials, ensuring that management of the corporation continues smoothly as authority is transferred to the Secretary of the Treasury, and the like. Personnel payments, as you know, are being reviewed by the Office of Personnel Management and we have established a contact with that agency to ensure that final paychecks and pension matters are properly handled.

Although this part of the project is important, it is of short duration. A significant portion of our time has been devoted to the longer range issue of devising a method for protecting the Government's interests in the ongoing synthetic fuels projects to which the Goverment is committed, some of which will involve our monitoring well into the 1990s.

In this regard, we have been proceeding cautiously and discussing the options for managing this monitoring with a number of interested parties - for several reasons. First, the Treasury Department's expertise is in money, not in energy project engineering, technology or cost analysis, nor the other major area that is part of each of the projects, environmental protection. So we are trying to make certain that we set up a structure that will protect us where we lack resources.

Second, the Continuing Resolution prohibits the Secretary from delegating any of his authority and responsibilities to any other agency. Because of this, we have determined that the best way to proceed is to hire a small staff of approximately 8 to 10 people to provide the energy, project and environmental expertise we need to match our capabilities in the financial area. (While the size and composition of this staff is not final, our intent is to keep it as small as possible. In addition, we plan to hire these individuals, at government rates, and on limited term appointments where possible, so that we will have the flexibility to alter the staff as we gain experience in this new area.)

The final reason for our deliberate and limited approach focuses on future relations with the Congress. We view our role in the SynFuels area as carrying out the direction given us by the Continuing Resolution. We have no interest in building a permanent structure in the Department to carry out energy-related programs. But we do want to meet our obligations concerning this project efficiently and effectively. To this end we welcome your advice and guidance and solicit your understanding that the SynFuels project places an unexpected -- and unplanned -- burden on the resources of the Department.

Thank you for your time; I would welcome any questions you may have.

TREASURY NEWS

Department of the Treasury • Washington, D.C. • Telephone 566-204

For Immediate Release
Thursday, November 14, 1985

Contact: Art Siddon
566-5252

Charles O. Sethness
Appointed Assistant Secretary for Domestic Finance

Charles O. Sethness was appointed by President Reagan to be the Assistant Secretary for Domestic Finance at the Treasury Department. His nomination was confirmed by the United States Senate on October 29, 1985.

As Assistant Secretary for Domestic Finance, Mr. Sethness will have three main areas of responsibility. The first is the Office of Federal Finance, which includes management of the government debt, the Federal Financing Bank, and government credit programs. He is also responsible for the Office of Financial Institutions, which is involved in developing Administration policy on the rapidly changing financial services industry. His third area of responsibility is the Office of State and Local Finance, which includes monitoring the finances of State and local governments, and administration of the Revenue Sharing Program.

Prior to his appointment, Mr. Sethness spent four years as the Associate Dean for External Relations at the Harvard Business School. Prior to that he was a Managing Director of Morgan Stanley & Co., Incorporated.

Mr. Sethness is no stranger to the Washington political scene. Between 1973 and 1975 he served as the U.S. Executive Director on the board of the World Bank.

Mr. Sethness received his bachelors degree from Princeton University in 1963, and graduated from Harvard Business School with high distinction in 1966 as a Baker Scholar.

He is a native of Winnetka, Illinois, is married and has four children.

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Mr. YATES. Mr. Bayrer, your statement may be made a part of the record.

[The statement of Mr. Bayrer follows:]

TESTIMONY OF RALPH L. BAYRER
U. S. SYNTHETIC FUELS CORPORATION
BEFORE THE HOUSE APPROPRIATIONS SUBCOMMITTEE
ON INTERIOR AND RELATED AGENCIES
FEBRUARY 18, 1986
WASHINGTON, D.C.

Mr. Chairman, Members of the Subcommittee:

I am pleased to have this opportunity to discuss with you the status of the Corporation's program at the time of its termination. I will concentrate my remarks on the four projects that received financial assistance and are now in construction, start-up or operation. These projects represent the principal accomplishments of the Corporation and, if successful, will enable limited but important national capabilities for alternative energy liquids and gases to be developed when these are needed.

In addition, I would like to discuss these project accomplishments in light of the Energy Security Act's goal of technical and resource diversity as articulated in the Corporation's Phase I Business Plan.

THE FOUR ASSISTED PROJECTS

In 1985, the Corporation's Board of Directors awarded financial assistance to the Forest Hill Heavy Oil Project in Texas and executed a contract amendment agreement with the Union Oil Parachute Creek Program in Colorado. These projects, together with the Cool Water Coal Gasification Project in California and the Dow Syngas Project in Louisiana, bring to four the total number of projects awarded assistance by the Corporation.

These projects have the potential to access, for synthetic fuels production purposes, most of the Nation's major coal and shale resources and, to a lesser degree, heavy oil resources. My following remarks will present for each project a brief description of its technology and purpose, potential programmatic contribution, financial assistance terms, and status.

Cool Water Coal Gasification Program

The Cool Water Coal Gasification Program was awarded financial assistance of $120 million in the form of price guarantees by the Corporation on July 28, 1983. The sponsoring consortium includes Texaco, Inc., Southern California Edison Company, Bechtel Power Corporation, the Electric Power Research Institute, General Electric Company and the Japan Cool Water Program Partnership. The Empire State Electric Energy Research Corporation and the Sohio Alternate Energy Development Company are also project contributors. The Cool Water plant is located in the Mojave Desert near Barstow, California, next to Southern California Edison's existing Cool Water generating station.

The Cool Water plant produces a medium-Btu fuel gas with a heating value of approximately 265 Btu per standard cubic foot (SCF), integrated in a combined-cycle electrical generating unit. At design capacity of 1,000 tons per day of coal feed (dry basis), total syngas production is approximately 70 million SCF per day. The plant also produces 10 million pounds per day of high-pressure superheated steam. Both the syngas and the steam are used in a combined-cycle unit to generate about 111 megawatts (net) of electric power, which is sold and transmitted through Southern California Edison's existing power distribution system. The amount of electric power produced by the Cool Water project is equivalent to that obtained from an oil-fired power plant consuming 4,300 barrels of oil per day and can satisfy the daily electric needs of 50,000 residential customers. Although the plant is designed to process a high-grade bituminous coal from the Southern Utah Fuel Co. mines near Salina, Utah, it also offers the potential for processing other coals. A testing program on alternate coals was initiated in December, 1985, beginning with high sulfur bituminous caking coal (Illinois No. 6), and to be followed by tests with Pittsburgh No. 8 coal. These bituminous coal resources offer significant potential for use as a synthetic fuel feedstock. National bituminous coal production potential is estimated on the order of 400 billion barrels of oil equivalent and Corporation programmatic analysis indicates that bituminous coal facilities have significant replication potential.

The Texaco gasification technology utilized in the Cool Water project offers a number of improvements over other commercially available gasification technologies, including feedstock-flexibility, ability to operate at pressure and high environmental acceptability.

The integrated coal gasification combined-cycle technology (IGCC) used at the Cool Water facility is one of the most efficient and environmentally sound methods of fossil fuel based electric power generation in the United States. Based on the Cool Water experience, conversion efficiencies of such power generation systems are expected to improve further as advanced high temperature gas turbine technology is implemented in large stationary gas turbines. The project demonstrates that a high pressure gasifier and a combined-cycle power generating unit can be integrated efficiently and that power can be dispatched reliably. The proven performance of a high temperature heat recovery system integrated with the gasifier and power generation unit should open the substantial utility market to fuel gas from coal. Currently, the Utility Coal Gasification Association, a group comprised of over 30 utility companies, is following developments at Cool Water closely. Within this Association a smaller group of perhaps five to ten utilities appears to have already initiated serious studies aimed at installation of IGCC plants in the early 1990's.

Other potential advantages for utilities of the Cool Water technology include: (1) exceptionally clean use of coal; (2) power production costs equivalent to, or less than, conventional coal-fired central station plants, with flue gas scrubbing; (3) capability for installing additional operating capacity on a "modular" basis, allowing reduced construction time and a closer match with load growth; and, (4) adaptability for the installation of an oil- or gas-fired combined-cycle plant first, followed by the addition of coal gasification later, as dictated by future fuel prices and fuel availability.

Financial assistance to the project is limited to a maximum of $120 million in price guarantees for the medium-Btu syngas produced when the gas has been converted to electric power, sold to and distributed through the Southern California Edison system. Corporation assistance ends when either 20 trillion Btu's of syngas have been produced or when $120 million in price guarantee payments have been made, whichever occurs first.

Price guarantee payments are based upon the difference between the market price and the contract guaranteed price for the syngas. The guaranteed price is $12.50 per million Btu for the first 9 trillion Btu's, and $9.75 per million Btu for the next 11 trillion Btu's, escalated for inflation. Through December 31, 1985 the Cool Water project produced 5 trillion Btu's of syngas for which it received price differential payments of approximately $40 million. Corporation profit-sharing provisions are included for the first 20 years of the project's life.

Construction of the Cool Water plant began on December 15, 1981 and was completed by May 1, 1984, one month ahead of schedule. Operation of the coal gasifier began on May 7, 1984 and initial production of electricity occurred about two weeks later on May 20. Commercial operations began on June 24, 1984 upon completion of a 10-day acceptance test run required by the Corporation, and syngas production became eligible for Corporation price differential payments the following day.

The Cool Water plant has exceeded its projected production goals, despite encountering various difficulties typically associated with the start-up of a first-of-a-kind facility. The plant has operated at full design production capacity in terms of coal throughput, syngas generation and electric power output and its pollutant emissions are well below strict State of California permit standards. Goals set for "ramping up" production during the first few years of operation have been met or exceeded. From initial start-up on June, 1984 through the end of 1985, the plant has demonstrated an on-stream factor in excess of 55 percent. During 1985, on-stream time exceeded 60 percent.

The estimated capital cost of the Cool Water plant was $294 million. The actual completed cost was $278 million and included a spare, quench-type gasifier which was added after construction had begun. This spare gasifier will help assure steady production in the event of any extensive outage of the main gasifier.

The Cool Water project is being undertaken in two stages. In stage I, project sponsors will operate the plant for five years with price guarantee assistance from the Corporation. Stage II begins at the end of the first five years when Corporation assistance will end. At that time Southern California Edison is expected to acquire full ownership of the facility and to run it for a total operating lifetime of up to 20 years.

The Cool Water project has obtained all its required environmental permits for operation. The principal permits are the Prevention of Significant Deterioration permit (air pollution) issued by the U.S. Environmental Protection Agency and the California Energy Commission (CEC) permit. The Cool Water project is designed to have essentially no liquid discharge. Wastewater is treated and reused or impounded in existing lined evaporation ponds. Of the two solid waste products produced by the facility, the elemental sulfur is being sold under contract and the slag is being temporarily stored in an impermeable lined pit. Following recent notification by the California Department of Health Services that the slag is non-hazardous, the project is now seeking a market for sale of the slag.

Environmental monitoring of the Cool Water project in the areas of water, solid waste, worker health and safety and socioeconomic impacts involves the collection and analysis of both permit-mandated monitoring data and supplemental monitoring data. A Monitoring Review Committee, composed of representatives from the Synthetic Fuels Corporation, the Cool Water project, the Environmental Protection Agency, the Department of Energy and the California Energy Commission, has been established to review the environmental and health monitoring program and data provided in the Cool Water project's environmental monitoring reports. To date, the Committee has met twice, once at the project site and once at the Corporation's headquarters.

Dow Syngas Project

The Dow Syngas Project was awarded $620 million of financial assistance in the form of price guarantees by the Corporation on April 26, 1984. The project will utilize an entrained-flow (slurry fed) gasifier to convert western subbituminous coal into medium-Btu fuel gas for industrial use. The project is sponsored by Louisiana Gasification Technology, Inc., a wholly owned subsidiary of the Dow Chemical Company (Dow), and will be located within Dow's existing chemical plant complex in Plaquemine, Louisiana. Dow will purchase and utilize the medium-Btu fuel gas for the production of approximately 180 MW of power in existing gas turbines. At full capacity, the facility will operate at a feed rate of 2,400 tons of subbituminous coal per day and produce 30 billion Btu's of fuel gas.

The national synthetic fuel production potential of the subbituminous coal resource utilized by the Dow Syngas Project is estimated on the order of 400 billion barrels. In addition, the Dow Syngas facility is capable of processing lignite and bituminous coals, which are also available in large quantities in the United States and could be used as feedstock coals in the future, depending on economics and supply conditions.

The Dow Syngas Project will use a pressurized, slagging, entrained-flow gasifier which is free of many of the limitations affecting other commercially proven gasifiers. In addition to offering the same improvements as the Texaco gasifier over other currently available technologies (see prior Cool Water discussion), the Dow technology is specifically designed to process low ranked coals reliably and economically.

Under the Price Guarantee Agreement, the Corporation is obligated to make price guarantee payments for the earlier of ten years or the maximum aggregate amount of $620 million. Price guarantee payments will be calculated on the basis of the number of million Btu's of medium-Btu gas sold to Dow each month multiplied by the amount by which the guaranteed price exceeds the market price. The guaranteed price is $12.50 per million Btu for the first 10,950 billion Btu's of fuel gas and $11.00 per million Btu thereafter, in each case adjusted quarterly for inflation. The Price Guarantee Agreement requires that, under certain conditions, Dow will make revenue sharing payments to the Corporation for a period of 16 years from the date of initial production.

The definitive cost estimate developed in May, 1985 for the design, construction and commissioning of the Dow Syngas plant is $81 million. Considering development work and commitment of working capital, Dow's direct investment in the project will be approximately $105 million. The project will use a number of existing facilities at the Dow complex and will purchase oxygen from a third party supplier. Had this project been a complete stand-alone facility, the capital investment would have been in excess of $300 million. Dow Syngas is a clear illustration of the savings of a retrofit facility where a compatibility of interests can be arranged.

In May, 1985, Dow submitted a request to the Corporation to include a spare gasifier in the project. This request was predicated on a study which found that a second gasifier was necessary to insure that the project achieves its 85 percent design availability. The spare gasifier would enhance on-line availability but would not increase production capacity. Dow's analysis, subsequently confirmed by the Corporation's review, indicated that the cost of the second gasifier would be funded from the contingency within the definitive estimate, would not delay the schedule for the original gasifier and would have no effect upon the Corporation's price guarantee payment obligations to Dow. In accordance with the terms of the Price Guarantee Agreement, Dow's request for inclusion of the second gasifier was approved on July 30, 1985.

The Dow Syngas project is expected to be completed within budget and on schedule for initial production in the spring of 1987. During 1985, more than 80 percent of the detailed engineering, 85 percent of the procurement activities and approximately 15 percent of construction were completed. Construction of buildings and roads at the project site began in November, 1984 and heavy construction (pilings, foundations, tanks and structural steel) was started in the last half of 1985 and remains on schedule. Fabrication of the gasifier was also begun in late 1985. During 1986, all engineering and procurement efforts will be concluded and approximately 90 percent of the construction work will be completed.

Because the project will share some pollution control equipment already in place at the Plaquemine site, fewer permits are required than would be the case for a stand-alone project. Dow Syngas has obtained the necessary air permits from state and federal agencies and has applied for renewal of its existing state and federal permits allowing discharge of wastewater and solid-waste disposal for the entire chemical complex. These renewal applications include the operation of the gasification facility.

The project's Environmental Monitoring Plan (EMP) was prepared by Dow in accordance with Corporation's guidelines and reviewed by the Department of Energy, the Environmental Protection Agency and the Office of Environmental Affairs in the Louisiana Department of Natural Resources. These agencies will subsequently sit on a Monitoring Review Committee.

Forest Hill Heavy Oil Project

On September 24, 1985, the Corporation's Board of Directors authorized and the Chairman executed an award of financial assistance of $60 million in combined price and loan guarantees to the Forest Hill Company, a wholly owned subsidiary of Greenwich Oil Corporation, for a heavy oil recovery project in Wood County, Texas. The Forest Hill project produces heavy oil using an in situ combustion process known as oxygen fireflooding. The project is located in the Forest Hill Field in the center of the East Texas Basin, about 90 miles east of Dallas. The heavy oil will be produced from the Harris Sand formation which is located at an average depth of 4,800 feet; the Forest Hill Company holds approximately 1,900 acres of Harris Sand formation leases and other necessary surface rights.

The portion of the Harris Sand formation to be developed by the Forest Hill project contains an estimated 33 million barrels of oil in place. Over the projected 23-year life of the facility, production of 13,575,000 barrels of heavy oil is projected. Initial production, which triggers the availability of price guarantees, is expected to be achieved in the third quarter of 1986. The nominal production rate of 1,750 barrels per calendar day is projected to be achieved by 1989.

Oxygen fireflooding is potentially valuable in recovering heavy oil from deposits which cannot be addressed with steam, such as heavy oil from deep reservoirs (approximately 5,000 feet or more) from relatively thin reservoirs (less than 15 feet thick) and from mid-continent fields with low oil reactivity. Domestic heavy oil reservoirs falling into one of these categories are estimated to represent 2 to 5 billion barrels of technically recoverable oil. Oxygen fireflooding also has potential advantages over air fireflooding including projected lower operating costs (oxygen is cheaper than air to inject), faster oil recovery, lower quantity of off-gas and thereby lower disposal expenses and easier operation. It also has some higher risk resulting from the application of high purity, high pressure oxygen in conjunction with hydrocarbons, which accounts for the degree of innovation represented by the projects. The technology may have application to comparable quantities of tar sands as well.

The Forest Hill project will be the first commercial demonstration of the oxygen fireflood technology. Successful operation of the Project will answer questions concerning the technical and economic viability of the technology and its safety, and will enhance its likelihood of broad replication in the United States and abroad.

Presently, 62 production wells produce approximately 500 barrels per calendar day of blended oil. Existing operations at the field include diluent distribution, blended oil collection and treatment, diluent and blended oil storage and metering and a liquid oxygen and nitrogen supply facility and distribution system. Existing facilities also include 6 injection wells. The financial assistance awarded Forest Hill is for modification and expansion of existing operations. The modifications and expansion will increase the existing number of wells to 25 injection wells and 100 production wells over a 2-year period.

Funds required to finance the cost of modifying and expanding the project will be generated by the ongoing operation of the existing facility, equity contributions to Forest Hill from Greenwich Oil Corporation and loans guaranteed by the Corporation. The Corporation's maximum liability of $60 million will include a loan guarantee and an initial price guarantee of up to $35.6 million which will increase up to $60 million as the Corporation's loan guarantee liability is reduced. Scheduled repayment of the guaranteed loans will be in 10 equal, semiannual installments commencing 1 year after the start of commercial production.

Price guarantee payments will be made for oil produced from the Harris Sand formation and sold by Forest Hill. (The calculation of quantity of product eligible for payments is adjusted to take into account the volume of diluent oil purchased during the invoice month.) Until product exceeds 500,000 barrels, the guaranteed price is $40 per barrel. Thereafter, the guaranteed price is $37.50 per barrel. In each case the guaranteed price is adjusted partially for inflation.

Forest Hill obtained its Air Quality Permit to Construct from the Texas Air Control Board (TACB) in March, 1984. Because projected emissions levels from the project are below Prevention of Significant Deterioration permit trigger levels, no such permit is required. Project development will continue under the terms of the Permit to Construct until installation of a gas incinerator is completed. Once the incinerator is in place, the project must obtain an Air Quality Permit to Operate from the TACB. A flare system will be used to control project emissions until the incinerator is functioning.

The project currently has permit approval to inject oxygen up to a maximum surface pressure of 4,500 pounds per square inch into the Harris Sand formation. The project will require additional permits for future drilling of necessary production, injection and salt water disposal wells. The sponsor had obtained 63 permits for the drilling of individual production wells and each additional well required for the project will be permitted in the same manner. Six permits have been obtained for the drilling and operation of air injection wells, and each additional injection well required for the project will be permitted in the same manner. One permit for the disposal of wastewater using an injection well was obtained in April, 1978, and it is expected that one additional injection well and permit will be required. The project may also require a State Pollution Discharge Elimination System permit, issued by the Texas Department of Water Resources, if it chooses to discharge wastewater from the Pressure Swing Adsorption units into surface waters rather than to inject this wastewater into its injection wells.

Forest Hill's Environmental Monitoring Plan Outline was approved by the Corporation's Board of Directors on August 21, 1985. The financial assistance commitment requires that no later than June 21, 1986, Forest Hill shall prepare and submit an acceptable Environmental Monitoring Plan based on the Outline. A first draft of this Plan is to be submitted to the Corporation and the consulting agencies in early 1986 for review and comment.

Parachute Creek Program

The Parachute Creek project was awarded $400 million of price guarantee assistance by the Department of Energy on July 29, 1981 and an additional $500 million of price and loan guarantees for an augmented program by the Corporation on October 16, 1985. The DOE assistance was based on a proposal for Union Oil Company of California to construct Phase I of an eventual multi-phased program for the production of synthetic fuel from Union's oil shale properties near Parachute, Colorado. Phase I of the proposed program was to produce approximately 10,400 barrels per stream day (BPSD) of syncrude from oil shale using the Unishale "B" process. (Subsequent phases of the program would have provided for expanded production at rates of up to 90,000 BPSD.) On February 8, 1982, President Reagan declared the Synthetic Fuels Corporation operational and responsibility for monitoring the Union contract transferred from the DOE to the Corporation.

The oil shale feedstock used in the Phase I project comes from the Mahogany Zone of Colorado's Green River formation, the richest and highest grade deposit in the United States. This shale rock has an average yield of 34 gallons of retorted shale oil per ton of shale and is capable of supporting production of over 2 million barrels per day for over 100 years. The full production potential of the resource is estimated to be more than 1 trillion barrels of shale oil. Successful operation of Union's Phase I facility will demonstrate, at commercial scale, all the essential subsystems and supporting technologies for the mining and retorting of shale rock and the upgrading of raw shale oil and will establish the environmental acceptability of oil shale as an alternative energy source.

The financial assistance contract for Union's Phase I project established a maximum government liability of $400 million in price guarantee payments for up to a maximum of 20 million barrels of syncrude produced and sold. The project was to be eligible for such payments for syncrude produced and sold between the start of production and June 30, 1990. Price guarantee payments were based on the difference between the contractually guaranteed price and a weighted average price set by the Department of Defense for certain diesel and jet fuels. The contract guaranteed price was set at $42.50 per barrel for refined product, escalated by a formula which took into account inflation and increases in the price of natural gas. The agreement also stipulated that, from July 1, 1983 to June 30, 1993, Union would supply the Department of Defense (DOD) with 33 million barrels of product refined to military specification. The DOD would pay Union a per barrel price equivalent to the average market price for similar products. The DOD also had an option to purchase syncrude produced by Union from the Phase I facilities.

Engineering, procurement and construction of Union's 10,400 BPSD Phase I project were completed essentially on schedule in September, 1983. To date, however, start-up of the facility has been only partially successful. The shale mining, crushing and screening systems, and the new shale oil upgrader have been tested at design rates, but the retorting system has been unable to sustain steady state operation. Originally, Union believed that any start-up problems would center on the rock pump, the retort system's major component. The rock pump, however, has worked smoothly. The major problems encountered thus far have been with the scraper, which removes the hot retorted shale rock from the top of the retort, and the spent shale shaft cooler and seal leg system, which removes, cools and moistens the spent shale prior to disposal. Several modifications were made to the scraper system and, since April, 1984 it has performed satisfactorily. The spent shale shaft cooler and seal leg system have also undergone several modifications, but problems continue to prevent sustained operation at design production rates despite more than 40 separate start-up attempts, approximately 16 of which occurred in 1985. The last attempted start-up was July 17, 1985; since that time, the project has undertaken a major redesign of the spent shale shaft cooler and seal leg system using substantially different concepts and equipment. Testing of the new equipment is scheduled for April, 1986. All project costs are currently being borne by Union. The Corporation has made no price differential payments to date.

During this period Union had negotiated a letter of intent with the Corporation for additional assistance of $2.7 billion for a 42,000 BPSD Phase II program. However, the change in world energy conditions, coupled with difficulties in achieving satisfactory operation of the Phase I project, led Union in 1985 to reassess its Parachute Creek Shale Oil Program. Discussions between Union and the Corporation concerning an amendment to the original DOE financial assistance contract in lieu of the letter of intent were initiated in the spring of 1985 and Union formally requested consideration of an amendment to the contract on August 9, 1985.

Union proposed that the Corporation provide additional assistance to incorporate the newer Unishale "C" technology planned for Phase II into the existing Phase I facility. Union also sought extensions of certain payment and production schedules in the DOE contract.

As proposed, the Unishale "C" process would achieve greater energy efficiency than the Unishale "B" process by burning the residual carbon remaining in the retorted shale, thereby recovering heat for further use by the facility. In the Unishale "C" process, the hot retorted shale is crushed and fed to a fluidized-bed combustor (FBC). The hot gases produced in the FBC can be used for both recycle gas heating and steam/or electric power generation. The recovery of this otherwise wasted energy enables the project to reduce substantially its purchase of electricity and natural gas and hence its operating costs. The Unishale "C" process also eliminates the need for the spent shale cooler and seal leg system that have caused operating problems.

The terms of the contract amendment approved by the Corporation provide for additional assistance of up to a maximum of $500 million in the form of loan guarantees and price guarantees. Contingent guaranteed loan assistance of up to $300 million is authorized, with the first drawdown expected to occur in December, 1986 when certain engineering milestones have been achieved. The first actual federal outlays to the project will come only with the commencement of commercial production from the facility. The Amendment Agreement also extends for a period of 10 years from initial production the eligibility period for Union to receive up to $400 million in price guarantee assistance for syncrude produced under the original DOE contract. The Board, on January 21, 1986, authorized the execution of the Loan and Guarantee Agreement and Collateral Agreements pursuant to the previously approved Amendment Agreements.

Union has already invested approximately $900 million in the development, design, construction and operation of the Phase I project. Under the terms of the Amendment Agreement, Union will make an additional investment of approximately $550 million to augment the facility with the more efficient FBC technology. Until the FBC technology is commercially operational, no portion of the $500 million of Corporation assistance may be used for price support payments for syncrude produced from the Phase I facility. For a period of 16 years from the date of the first sale of eligible product, Union will make profit-sharing payments under certain conditions.

With respect to environmental matters, Union has obtained all major federal and state permits required for Phase I and it has also begun submitting applications for those permits which would have been required for the larger Phase II project. Some data already collected for Phase II permits and reviewed by cognizant permitting authorities are applicable to installation of the Unishale "C" technology, which will require additional new or modified permits.

During its start-up efforts, the Phase I facility has experienced a number of permit and/or regulatory violations. Union has worked with state and federal regulatory authorities to correct the conditions of noncompliance. In all cases, cooperation has been good and issues have been resolved satisfactorily.

Union submitted its first draft of an Environmental Monitoring Plan Outline for the Parachute Creek Phase II project to the Corporation, the Environmental Protection Agency, the Department of Energy and the Colorado Department of Natural Resources on January 20, 1984. Based on the comments of the consulting agencies, the Corporation found that the Parachute Creek Phase II EMP Outline was consistent with the Corporation's Environmental Monitoring Plan Guidelines and provided a sound basis for the environmental monitoring of the project.

Using the earlier outline as a starting point, Union submitted an EMP outline for the amended Phase I facilities on August 26, 1985. Union subsequently prepared an addendum to its outline which responded to comments received from the consulting agencies.

Union's EMP Outline for the augmented Phase I facilities was approved by the Corporation's Board of Directors on September 24, 1985. Union is currently working to develop a detailed Environmental Monitoring Plan which is due to the Corporation, after review by the consulting agencies, in September, 1986.

During 1986, Union is pursuing two paths of activity simultaneously. One involves continued modifications to the Phase I retorted shale cooling system in an attempt to correct the problems and make the Unishale "B" technology operational. Concurrently, Union will be selecting a process licensor to provide the fluidized-bed combustor for installation in the Phase I facility. Union will then develop the integrated process and the basis for prototype testing. After testing, the project will develop additional engineering drawings and specifications and a final capital cost estimate and project schedule. Final design and construction of the fluidized-bed combustor is scheduled to begin in late December, 1986. Construction of the fluidized-bed combustor will take about 2-1/2 years and start-up of the facility will begin in mid-1989. During the first year of operation, it is expected that production will be at a reduced rate, but will be ramped up to full capacity in 1990.

PROGRESS TOWARD GOALS

Section 100(b)(2) of the Energy Security Act established several central purposes for the Nation's synthetic fuel program which have served to direct the Corporation's activities over the past five years, i.e., achieving specified levels of production by 1987 and 1992 and achieving resource and technical diversity in supported projects. The first of these goals, the achievement of specified levels of synthetic fuels production, was temporarily suspended by the Continuing Appropriations Act for FY 85

(P.L. 98-473). That legislation directed that, until such time as the Corporation's Comprehensive Strategy was approved by Congress, the Corporation should solicit proposals and award financial assistance without regard to the national synthetic fuel production goals established by Section 125 of the Energy Security Act.

With regard to diversity, the Board has consistently encouraged the development of projects demonstrating a diversity of resource/technology combinations and promoting regional dispersal.

After the production goals were legislatively suspended in October, 1984, the reconstituted Board focused on designing a program to achieve objectives of diversity. The underlying rationale for a diverse slate of projects was that they would provide substantial benefits, including (1) ensuring that, for each major resource, at least one demonstrated technology would be available to expand production in the future; (2) reducing the risk associated with reliance on a single technology for producing synthetic fuel from a given resource; (3) increasing the probability that an economically competitive technology will eventually be developed from among possible options, and (4) providing competition by introducing into the market more than one technology for processing a given resource.

The Phase I Business Plan, adopted by the Board in February, 1985, identified various combinations of resources and technologies and grouped these into three categories:

1. Priority combinations where assistance to projects which meet the Corporation's standards of technical and financial strength could significantly enhance the Nation's synthetic fuels capability.

2. Combinations where information and experience were considered adequate for future private sector development and requiring no further Corporation support in Phase I.

3. Lower priority combinations where the Board found no need to solicit projects but would nevertheless consider project proposals which may offer significant advantages for the program.

The specific resource/technology combinations are shown in Table 1. I will now discuss the basis for setting specific priorities in each of the key resource areas.

Coal Resource

The Board placed principal emphasis on the coal resource because it is the largest domestic energy resource. Roughly three out of every four states in the United States contain some coal deposits and recoverable coal, if utilized as synthetic fuels, could provide the equivalent of 800 billion barrels of oil. Coal resources differ greatly from region to region and often even within regions. Consequently, a number of technologies would be needed for the most efficient processing of the various kinds of domestic coals as well as to provide competition.

Both gaseous and liquid synthetic fuels can be produced from coal, although not all coals are well suited for producing both. Medium-Btu fuel gas, synthesis gas for use as chemical feedstock and high-Btu fuel gas for use as a natural gas substitute are the principal gaseous products produced by gasification.

Conversion of coal to liquid fuels has developed along two principal technical routes. In the "indirect" route, the initial step is gasification of the coal, followed by synthesis of liquids from the gaseous products. Once the coal has been gasified and the raw gas cleaned, a wide range of final products such as gasoline or methanol can be synthesized in a variety of commercial or near-commercial processes. These "down-stream" synthesis processes are essentially independent of the gasifier used, except that they generally operate under pressure, providing a significant economic premium for pressurized gasification. The "direct" route adds hydrogen (usually obtained by gasification of coal or process residues) directly to the coal under high pressure to produce liquid products. While no agreement currently exists regarding the superiority of either route, there is agreement that the indirect route is currently more developed and ready for commercial application.

Because gasification is viewed by the Board to be nearer commercial feasibility and to be the more versatile process in that it is applicable to indirect liquefaction, the emphasis in the Corporation's Phase I program was to assure that satisfactory technology was in hand to gasify under pressure the major U.S. coal resources, leaving it to the market to determine which final products should be produced by any specific project. The Board determined that three "indirect" generic coal gasification technologies, fixed-bed, entrained flow and fluid-bed gasification, should each be given priority in the processing of coals. Each embodies a different approach to gasification and has potential technical advantages over the others that could be translated into eventual economic advantage. By supporting all three, the program would have a high probability of having proven the low cost approach to both liquid and gaseous synthetic fuels.

Table I

Program Priorities of Phase I
Business Plan
Adopted 2/19/85

RESOURCE	PRIMARY PRIORITY[1]	SECONDARY PRIORITY[2]
COAL	Fixed-Bed Gasification Dry Bottom[3] Slagging	Direct Hydrogenation
	Entrained-Flow Gasification Slurry Feed[3] Dry Feed Fluid-Bed Gasification	Other Resources and Technologies
SHALE	Surface Retorting of Western Shale Union B Retort[3] Other Retorts	True In Situ Retorting of Western Shale
	Modified In Situ Retorting of Western Shale	Surface Retorting of Eastern Shale
HEAVY OIL/TAR SANDS	In Situ Recovery	
	Mining and Surface Processing	

1/ The Corporation was to specify how and when it intended to solicit and select projects in this category. However, competing demands on funds or absence of suitable projects could have precluded Corporation assistance for one or more of these primary priorities.

2/ The Corporation did not anticipate soliciting projects in this category but was willing to consider specific projects that offered special advantages to the program.

3/ Projects under way at the time the Business Plan was approved. No projects beyond these were expected to be assisted in Phase I.

Dry bottom fixed-bed gasification is applicable to subbituminous coals and lignites which constitute about one-third of the total domestic coal supply. The Great Plains lignite gasification plant in North Dakota is now producing high-Btu gas at design capacity for pipeline distribution using the Lurgi technology. There is also extensive foreign experience with this technology.

Entrained-flow gasification with slurry feed is generically represented by the Corporation-assisted Cool Water project in California and the Dow Syngas project in Louisiana. Western bituminous and western subbituminous coals will be the primary feedstocks of these projects. These technologies can process virtually all ranks of coal.

The Board believed that once these projects were in sustained commercial operation, their technologies would be ready for private sector deployment where economically feasible. Thus, there was no need for the Corporation to support additional projects in these technology categories in the Phase I program.

Slagging fixed-bed pressurized gasification, dry feed pressurized entrained-flow gasification and fluid-bed pressurized gasification represent the other priority technologies which would have completed the Phase I program. Four projects using these technologies were pending before the Corporation at the time of its abolishment: Keystone (Pennsylvania) and COGA-1 (Illinois) would have used pressurized fluid-bed technologies on eastern bituminous coal; Virginia Power (Virginia) proposed to use a fixed-bed slagging technology on eastern bituminous coals and Utah Methanol (Utah) utilized a dry feed entrained-flow technology on western bituminous coal.

Shale Oil Resources

Domestic oil shale is the second largest synthetic fuel resource, with a potential of approximately 630 billion barrels of oil. Western shale is rich, yielding at least 25 gallons of oil per ton; it is found principally in deep concentrated deposits in Colorado, Utah and Wyoming. Eastern shale, in contrast, yields approximately 10 gallons per ton; it is found in shallow deposits ranging through upwards of a dozen states in the mid-central and Appalachian regions of the country.

Priority oil shale technologies identified in the Phase I Business Plan are mining and surface retorting of western shale and modified in situ (MIS) retorting of western shale (assuming diversity in the above ground retorting technology). In situ retorting of western shale and eastern shale technology, while given lesser priority, were deemed desirable. In situ technology has potential environmental advantages and eastern shale development has the advantages of an existing infrastructure and thus potentially less severe impacts from industry growth.

The Union Oil Parachute Creek project is designed to mine, surface retort and upgrade western shale. The Union technology is applicable to virtually all shales and will, if successful, provide the capability for an oil shale industry. Fulfillment of the Business Plan would have included at least one more western shale project using a different retorting technology, and possibly including an MIS technology.

Heavy Oil/Tar Sands Resources

The heavy oil and tar sands resource category includes a wide range of hydrocarbons, some of which can be recovered by in situ processes and some of which require mining and surface processing. Projects producing synthetic fuels from tar sands and qualifying heavy oil resources have priority under the Phase I Business Plan principally because, once production techniques have been proven, output could be expanded relatively quickly in response to any sudden supply shut off or prohibitive price increase.

An award of $60 million was made to the Forest Hill heavy oil project in September, 1985, providing loan and price guarantees to demonstrate heavy oil recovery through oxygen firefloding. Two tar sands projects were also under consideration by the Corporation in December, 1985.

In summary, there are 5 synthetic fuels projects now under construction or in operation: Cool Water, Dow Syngas, Union Oil Parachute Creek and Forest Hill projects discussed above and the Great Plains project which received assistance from the Department of Energy and is being monitored by that agency. They have the potential to provide capabilities for synthetic fuels production in a number of key substantial resource areas. If these projects are technically successful in meeting or exceeding design parameters and, if the projects continue operation with increasingly experienced staffs, the Nation will have some capability to expand production of a variety of synthetic fuels economically should circumstances dictate.

On the other hand, the limited diversity of the program will necessarily result in fewer production options and perhaps higher national energy costs than would have been the case had the Act's diversity objective been more fully attained through implementation of the Phase I Business Plan.

* * *

The Corporation is in the final stages of carrying out its termination as required under Public Law 99-190, the Continuing Appropriations Act for Fiscal Year 1986. Task Forces have been working with the Department of the Treasury to ensure an orderly transfer of the monitoring of the 4 projects in accordance with their financial assistance contracts and an administratively efficient close down of the Corporation. The Board of Directors resigned Friday, February 14, 1986.

Other testimony today will address the subject for the phasedown of the Corporation and the approach being adopted by the Department of Treasury for project monitoring.

I would however, like to mention one issue that has arisen regarding future contract monitoring. The Continuing Resolution provided that "the Board may not make any legally binding awards or commitments for financial assistance (including any changes in an existing award or commitment) . . ." The restriction on changes in existing contracts is potentially quite troublesome, as it might be read to preclude the kind of routine changes in minor terms of the contracts necessary to carry out their basic intent. Senator McClure, during passage of the Continuing Resolution, has explained this provision as follows:

> "It is not intended, however, that this limitation on changes or modifications to existing financial awards or commitments restrict changes which may be necessary as part of normal contract monitoring or administration activities. This restriction on changes, in coordination with the rescission of funds in the Energy Security Reserve, does however limit the authority of the Board (or the Secretary) to make changes which would increase the maximum obligations authority established by the Corporation with respect to any such award or commitment."

Should this interpretation be adopted, the task of performance and implementation of existing contracts will be immeasurably eased.

0065m

RALPH L. BAYRER

Ralph L. Bayrer is Vice President for Projects within the U.S. Synthetic Fuels Corporation formed in late 1980. His responsibilities include overall management of the evaluation of project proposals.

Prior to joining the Corporation, he was Director of the Office of Policy, Planning and Analysis for the Assistant Secretary for Resource Applications, Department of Energy (DOE). Among other things, in this capacity he was deputy to the official responsible for the Interim Alternative Fuels Program. He came to DOE from the Energy Research and Development Administration (ERDA) where he had served as Executive Assistant to the Acting Administrator from January, 1977 until ERDA was merged into DOE on October 1, 1977.

From 1975 until January, 1977, Mr. Bayrer was Assistant Director for Special Studies in the Office of Planning of ERDA. From 1968 to 1974, he was a Senior Associate with McKinsey and Company which is an international management consulting firm. During this period, he worked principally in the areas of strategic planning, organization and financial analysis.

Mr. Bayrer served six years on the staff of Admiral Hyman G. Rickover, USN, Administrator of the Naval Reactors Program. He was responsible for fluid systems design and overall operation of nine submarine nuclear plants.

Born in New York City, Mr. Bayrer received a Bachelor of Engineering Physics degree from Cornell University and a Master of Science (Physics) from Georgetown University.

RALPH L. BAYRER
Vice President for Projects

EMPLOYMENT HISTORY

U.S. Department of Energy — October, 1977 - November, 1980

Director of the Office of Policy, Planning & Analysis, Resource Applications

U.S. Energy Research
& Development Administration — February, 1975 - September, 1977

- o Executive Assistant to the Acting Administration
- o Assistant Director for Special Projects

McKinsey and Company — April, 1968 - February, 1975

Senior Associate

U.S. Department of the Navy — July, 1966 - February, 1968

Nuclear Engineer

U.S. Navy — July, 1962 - June, 1966

Officer

EDUCATION

Cornell University - Bachelor of Engineering Physics	1957 - 1962
Georgetown University - Master of Science (Physics)	1962 - 1968
Bettis Reactor Engineering School - Certificate	1963 - 1964

Mr. **Yates.** Mr. Miller, you don't have one?

Mr. **Miller.** I have a statement to be submitted for the record. I would underscore what Mr. Sethness has said. It is our goal in the administrative area to hand the Treasury Department as near to an administrative zero as we can by April 18.

We have been working very closly with Treasury officials, and we are very well on our way to meeting that goal.

[The statement of Mr. Miller follows:]

STATEMENT OF RICHARD E. MILLER
Acting Vice President - Administration & Comptroller
U.S. SYNTHETIC FUELS CORPORATION
TERMINATION BUDGET - FY 1986
(December 19, 1985 - April 18, 1986)

Justification

BACKGROUND

The Congress, in passing Public Law 99-190, took several actions which affect the financial aspects of the U.S. Synthetic Fuels Corporation, as follows:

1. Effective December 19, 1985, the Board cannot make "any legally binding awards or commitments for financial assistance (including any changes in an existing award or commitment)..., except that nothing in this Act shall impair or alter the powers, duties, rights, obligations, privileges or liabilities of the Corporation, its Board or Chairman or project sponsors in the performance and completion of the terms and undertakings of a legally binding award or commitment entered into prior to" December 19, 1985.

2. Not later than February 17, 1986, the Directors shall terminate their duties and be discharged, and by April 18, 1986, the Corporation shall terminate in accordance with Subtitle J of the Energy Security Act (the "ESA").

3. Not later than February 17, 1986, the Secretary of the Treasury shall assume the duties of Chairman, and such duties may not be transferred by him to another federal agency.

4. To the extent the Secretary of the Treasury is required to consult with the Corporation in connection with an award or commitment under the ESA, such consultation is required by January 18, 1986.

5. The Director of the Office of Personnel Management ("OPM") is required to determine by February 1, 1986, the compensation rights to which the Corporation's Directors, officers, and employees are entitled under any contract in effect on December 19, 1985.

6. No change in compensation or benefits in effect on December 19, 1985 is permitted unless the Director of OPM agrees the change is reasonable.

7. After December 19, 1985, no officer or employee may receive a salary in excess of Level IV of the Executive Schedule, and the Corporation may not waive any requirements in its By-laws which are necessary to qualify for pension or termination benefits under the By-laws and written personnel policies and procedures.

8. The amounts available to the Board of Directors of the United States Synthetic Fuels Corporation and not obligated as of the date of enactment of the Continuing Resolution were rescinded, except that:

   a. $10 million in previously appropriated funds within the Energy Security Act were made available "to terminate the Corporation," and

b. Such amounts as may be necessary to make payments for synthetic fuels projects or modules for which legally binding awards or commitments were entered into under Title I of the Energy Security Act before December 19, 1985, were retained.

ADMINISTRATIVE EXPENSES

The Board of Directors approved a Termination Plan and a Termination Budget at its final meeting on January 21, 1986. The Termination Plan included a schedule for the phase-down of staff, taking into account the work required to conclude in orderly manner the administrative affairs of the Corporation and to transfer monitoring responsibility for the four projects under contract to the Treasury Department, as required by law. The Termination Budget of $10 million, identified specific costs relative to termination of the Corporation. Estimates of staffing costs are derived from existing salaries (as limited by P.L. 99-190) plus benefits in place prior to December 19, 1985. Other estimated costs include on-going project monitoring costs and costs related to the cancellation of contracts for goods, services, equipment, lease, etc. No new contracts will be authorized, except as absolutely necessary to the termination effort or the proper monitoring of project contracts.

Total expenses for the Corporation for fiscal year 1986 are expected to be $12.4 million which is derived as follows:

Actual expenses, Oct. 1, 1985 to Dec. 18, 1985	$ 2.4 million
Termination costs - Dec. 19, 1985 to April 18, 1986	10.0 million
Total	$12.4 million

TREASURY LIAISON

Designated Corporation staff members have been working closely with Treasury Department officials to assure an orderly transition of necessary corporate functions to the Treasury Department and the efficient termination of the Corporation by April 18, 1986.

All administrative matters will be completed by the Corporation by April 18, 1986, with the exception of a minimum number of bills for which invoices can not be received prior to April 18, 1986.

STAFF PHASE DOWN

When P.L. 99-190 was signed into law, the Corporation had 131 employees. In planning for an orderly termination, each position was reviewed in relation to the termination work schedule and separation dates were established. In summary, the planned separations show:

Date	% Staff Separated
Feb. 28, 1986	26.7
March 31, 1986	45.8
April 18, 1986	100.0%

DISPOSITION OF ASSETS

It is planned that all physical assets, all files, records, library materials, etc., will be transferred to the Treasury Department under the authorities of the Energy Security Act.

PROGRAM COMMITMENTS

Four projects have received legally binding awards for financial assistance, as follows:

Project	Commitment Date	Amount (million)
Cool Water	7/28/83	$120
Dow Syngas	4/26/84	620
Forest Hill	9/24/85	60
Parachute Creek Phase I	7/29/81 (by DOE)	400
	10/16/85	500
Total		$1,700
(Total awarded by SFC)		(1,300)

To date, $42.1 million in price guarantees have been paid or authorized for payment to the Cool Water project and federal loan guarantees for $3.7 million in private loans have been provided to the Forest Hill project.

United States
Synthetic Fuels Corporation

U.S. SYNTHETIC FUELS CORPORATION
TERMINATION BUDGET - FY 1986
(December 19, 1986 - April 17, 1986)
EXPENSE ITEMS
(Dollars in thousands)

STAFF	$3,860.7
CONTRACTUAL AGREEMENTS:	
Contracts & consultants	$1,398.5
Data processing	174.5
Repair/maintenance	30.2
Moving expenses	49.4
Generic studies	188.2
Insurance	588.4
Subtotal	2,429.2
RENT, TELEPHONE, UTILITIES: through 4/18/86	
Rent	1,097.8
Telephone, utilities	126.6
Lease penalty contingency	2,211.5
Subtotal	3,435.9
ALL OTHER	274.2
Total	$10,000.0

United States
Synthetic Fuels Corporation

U.S. SYNTHETIC FUELS CORPORATION
EXPLANATION OF TERMINATION BUDGET
EXPENSE ITEMS
(Dollars in thousands)

STAFF	Includes salaries and benefits for staff as they are phased out. Also includes $1,050 thousand for severance payments and $493 accrued vacation (terminal leave) payments.	$3,861
CONTRACTUAL AGREEMENTS		2,429
Contracts and consultants	Includes payments of final billings plus contract termination costs for such items as outside legal Counsel costs related to projects. Also includes some termination activities.	1,398
Data processing	Equipment rental plus lease termination costs, and time-sharing agreements for accounting, payroll and financial modelling.	175
Repair and maintenance	Equipment maintenance through use period plus termination costs. Restoration of office space to condition required by lease.	30
Moving expenses	Close out of outstanding relocation agreements (made at time of hire) with employees.	49
Generic studies, specific reviews	Close out costs and payment of final billings.	188
Insurance	Includes estimated premiums for Directors' and officers' liability insurance.	588

United States
Synthetic Fuels Corporation

EXPLANATION OF TERMINATION BUDGET
Page 2

RENT, TELEPHONE, UTILITIES		3,436
Payments through 4/18/86		1,224
Rent	$1,098	
Telephone, utilities	126	
Lease penalty contingency		2,212
Payment of rent only through life of lease (April 1987)		
ALL OTHER		274
Supplies, printing, depreciation		

Budget

Richard E. Miller

9404 Woodland Drive
Silver Spring, MD 20910

Home (301) 588-4370
Work (202) 822-6522

BACKGROUND SUMMARY

A seasoned executive the fields of administrative and financial management. A proven track record of innovation, imagination and effective application of management skills.

EMPLOYMENT HISTORY

United States Synthetic Fuels Corporation 1982 - Present

Acting Vice President - Administration
Comptroller
Manager, Budget

Executive Management Service, Inc. - Consultants 1975 - 1982

Executive Vice President

National Rural Electric Cooperative Association 1974 - 1975

Administrator of Operations, Retirement, Safety and Insurance Department

U.S. Department of Labor 1962 - 1975

Comptroller,
Administrative Manager, Manpower Administration
Departmental Budget Officer

Previous

U.S. Bureau of the Budget (now OMB); U. S. Treasury Department; Internal Revenue Service

No periods of unemployment

RECOGNITION

President of U.S. Management Award
Distinguished Federal Financial Management Award
Department of Labor EEO Award
Six other performance awards

EDUCATION

George Washington University, BA
Accounting, Business Administration

George Washington University, No degree
Graduate study in federal financial management

University of Cincinnati, No degree
Graduate study in executive management

Mr. YATES. What happened to all the directors and the officers?

Mr. SETHNESS. The chairman and the directors all resigned effective last Friday.

Mr. MILLER. Under the authority of the Continuing Resolution, the Board of Directors, before they left, delegated everything they could to the chairman, with the view to the fact that the chairman would become the Assistant Secretary of the Treasury.

They couldn't delegate the authority appoint officers. All of the officers were discharged by the board, reappointed by the former chairman as acting officers, and serve in that capacity now. The ones who are most intimately involved are Mr. Bayrer and myself.

Mr. YATES. What happened to Mr. Noble?

Mr. MILLER. Mr. Noble resigned as of last Friday, and returned to Tulsa.

Mr. YATES. He was not one of the officers reappointed?

Mr. MILLER. He was a director and Chairman of the Board, so under the Continuing Resolution, his job was ended. We had no President for quite some time.

Mr. YATES. Okay. Since your reappointment, have you issued any new approvals for projects?

Mr. MILLER. No, sir.

Mr. YATES. You have not. Any comments on the last project that was approved?

Mr. BAYRER. We are prepared——

Mr. YATES. That took us by surprise, most Members of Congress, because it was thought that after we had reached our agreement on the conference report and the President signed our appropriations bill into law, you would do immediately what you did last Friday, and just go out of existence as fast as you could, rather than approving any other projects. Were you on the Board at the time?

Mr. BAYRER. No, sir. All of us were officers at the time, but none of us were Board members at the time.

Mr. YATES. Did you have any responsibility in the approval of projects?

Mr. BAYRER. My job was in the evaluation of a project when it applied to the Corporation. I was not involved in the negotiation of the contract or in that final approval.

With regard to your question, the Board, of course, was aware of the Continuing Resolution, and the deliberations on both the House and the Senate side, with regard to additional projects.

They examined that, and got independent legal judgments with regard to the question. The position that the Board took was that a binding commitment had been approved by the Board at their October 16 meeting with regard to the Union contract.

That agreement included in it all the obligational authority and the commitment to complete the loan guarantee, and the opinion was in completing the documentation of the loan guarantee did not add any new authority or was not inconsistent with the language of the Continuing Resolution.

If you care to examine that logic a little further, I brought our Deputy General Counsel, who carried out a fair amount of that analysis.

Mr. **Yates**. All right, that would be well if we could have that kind of analysis for the record.

Mr. **Bayrer**. Andy Tashman, Deputy General Counsel.

Mr. **Yates**. Tell us how the Board came to its convoluted judgment.

Mr. **Tashman**. The Board acted upon a memorandum of law prepared by the Legal Services Group, the Office of General Counsel. I have brought a copy of that memorandum with me today.

Mr. **Yates**. The legal memorandum prepared?

Mr. **Tashman**. Yes.

Mr. **Yates**. That may go into the record at this point.

[The information follows:]

United States
Synthetic Fuels Corporation

January 21, 1986

MEMORANDUM FOR THE BOARD OF DIRECTORS

FROM: Legal Services

SUBJECT: Approval and Execution of Union Guaranteed Loan Agreement and Collateral Agreements

The Board of Directors at its January 21, 1986 meeting is scheduled to consider the terms and conditions of a Guaranteed Loan Agreement and Collateral Agreements (a mortgage, operating agreement and construction account pledge agreement) to implement the Amendment Agreement between Union Oil Company of California (hereinafter "Union") and the U.S. Synthetic Fuels Corporation (hereinafter the "Corporation") approved by the Board and executed by the parties on October 16, 1985. Article 6 of the Amendment Agreement provides that "the Corporation hereby commits to execute on the Guaranteed Loan Closing Date the Guaranteed Loan Agreement, which Agreement shall incorporate the terms of the Corporation's guarantee of the payment of the principal of and interest on the Guaranteed Debt, substantially in the form of Schedule 6.2A thereto" subject among other conditions to execution of certain Collateral Agreements reasonably satisfactory to the Corporation. The Amendment Agreement further states in Article 11.25 that "Union and the Corporation agree that each will use its best efforts to cause the conditions set forth in Article 6 hereof to be fulfilled on or prior to December 31, 1985."

The Corporation completed its negotiations with Union and its lender, Manufacturers Hanover Trust Company, on the Guaranteed Loan Agreement and with Union on the Collateral Agreements and delivered drafts of these documents to each Director for consideration at the Board meeting scheduled for December 17, 1985 in order to meet the December 31, 1985 date of Article 11.25. The Board meeting, however, was cancelled. Interim legislation has raised a number of new issues regarding the approval of these documents by the Board of Directors and the subsequent execution of these documents by the Chairman.

This memorandum considers whether the Amendment Amendment constitutes a legally binding obligation committing the Corporation pursuant to its Article 6 to execute the Guaranteed Loan Agreement with attendant Collateral Agreements and whether its authority to do so is precluded by the rescission of funds and the termination of the Corporation contained in the H.R.J. Res. 465, the concurrent resolution making further continuing appropriations for Fiscal Year 1986 (hereinafter the "Continuing Resolution"), and more specifically the provisions therein pertaining to the Department of the Interior and Related Agencies in Title II-Related Agencies under the head "Department of Treasury, Energy Security Reserve (Including Rescission)." H.R.J. Res. 465 was enacted into law on December 19, 1985 as Pub. L. No. 99-190.

Summary

Having reviewed the circumstances surrounding the approval and execution of the Union Amendment Agreement, the terms of the Amendment Agreement and the language and legislative history of the Continuing Resolution, we conclude that there is no bar to Board approval and Corporation execution of the Guaranteed Loan Agreement and the Collateral Agreements.

I. Effectiveness of Board Approval and Corporation Execution of Amendment

We have reviewed the documents and circumstances pertaining to the Board's approval of the Amendment Agreement and its subsequent execution by the parties with respect to whether any act or omission by the Corporation in the formulation, approval and execution renders the Amendment Agreement invalid. The only question we have identified pertains to the requirement that the Corporation, in consultation with the Secretary of Treasury, insure that certain terms of financial assistance agreements have the minimum possible impact on the capital markets of the United States.

The Energy Security Act, Pub. Law No. 96-294 (hereinafter the "ESA") in Section 131(q) provides in pertinent part:

> (q) The Corporation, in consultation with the Secretary of the Treasury, shall insure to the maximum extent feasible that the timing, interest rate, and substantial terms and conditions of any financial assistance will have the minimum possible impact on the capital markets of the United States, taking into account Federal activities which directly or indirectly influence such capital markets.

The Board in approving the terms and conditions of the Amendment Agreement at its October 16, 1985 meeting stated in its Resolution with regard to Section 131(q)--

> The Corporation has provided copies of the Amendment Agreement to the Secretary of Treasury for his consultation under Section 131(q) of the Act and the Corporation, having taken into account the consultation views of the Secretary of Treasury on prior awards of similar financial assistance and its own analysis, concludes that to the maximum extent feasible the timing, interest rate and substantial terms and conditions of the Amendment Agreement will have minimum possible impact on the capital markets of the United States, taking into account federal activities which directly or indirectly influence such capital markets, provided however that further consultation with the Secretary of Treasury shall be requested as indicated below;

* * *

> RESOLVED, that the Chairman be directed to further consult with the Secretary of Treasury with respect to the impact on capital markets of the United States of the timing, interest rate and substantial terms and conditions of the financial assistance to be provided by the Amendment Agreement as further implemented by the Guaranteed Loan Agreement, Guaranteed Notes and, to the extent applicable, the Collateral Agreements, and to incorporate, to the extent practicable, any further consultation comments of the Secretary of Treasury and that the Chairman be directed to present to the Board for its approval forms of the Guaranteed Loan Agreement, Guaranteed Notes and Collateral Agreements after such consultation and prior to execution and delivery thereof....

The Staff's Findings Report on the "Proposed Award of Financial Assistance for the Parachute Creek Program," dated October 15, 1985, presented to the Board in connection with the Board's review of the Amendment Agreement discussed the consultation requirement of Section 131(q) and noted that the Corporation's staff had furnished the Department of Treasury with a materially complete draft of the Amendment Agreement on October 3, 1985; that no written response was received from Treasury; that the Corporation staff had undertaken discussions with the applicable Treasury officials; and that the Corporation in assessing the U.S. capital markets impact of the proposed Amendment Agrement had considered all comments received from Treasury, both on a formal and informal basis, during prior consultations with Treasury on similar Corporation financial assistance agreements.

On October 17, 1985, after the Amendment Agreement was executed, the Secretary of the Treasury wrote the Chairman stating that consultation with Treasury had not occurred and that Treasury would respond to the Corporation's consultation request in writing after completing its analysis. In a second letter dated October 29, 1985 the Secretary stated:

> Consequently, we cannot agree with your contention that the agreement by which financial assistance would be awarded to Union already has become a general obligation of the United States backed by its full faith and credit and incontestable in the hands of a holder. The Treasury Department's position is that financial assistance under Title I of the Energy Security Act can be awarded only after the consultation required by Section 131(q) has occurred. Thus, the October 16, 1985 agreement with Union has not yet become an obligation of the United States to which the full faith and credit and incontestability provisions under Title I of the Act lawfully can attach. Support for the Department's position has been received from Congressmen Dingell and Broyhill, Chairman and Ranking Minority Member, respectively, of the House of Representatives' Committee on Energy and Commerce....

The events concerning the consultation with Treasury to insure that the terms of the Amendment Agreement would, to the maximum feasible extent, have minimum impact on the United States capital markets are reviewed in the annexed January 16, 1986 memorandum from James Groelinger, Vice President-Finance. The memorandum details the Corporation's attempts to obtain a timely official response from the Department of Treasury on the Amendment Agreement, and describes how in the absence of a Treasury response the Corporation considered comments of Treasury provided in consultations on similar financial assistance agreements that were also applicable to the terms of the Amendment Agreement as part of its analysis of efforts to minimize, to the maximum extent feasible, the possible impact of the Corporation's loan and price guarantees on the capital markets of the United States. The resulting analysis was contained in the aforementioned Staff Findings Report.

It can be fairly concluded, and we ourselves conclude, that the Corporation made a good faith and reasonable effort to obtain comments from Treasury specifically directed to the terms of the Amendment Agreement. This effort included considering the comments received earlier from Treasury on similar financial transactions insofar as they related to U.S. capital markets and explaining to Treasury how the Corporation intended to treat them in the Amendment Agreement. Further, the Corporation having received from Treasury no response to its written request for consultation, or any requests from Treasury for additional time or that the Corporation delay action on the Amendment Agreement, it was reasonable for the Corporation to assume that Treasury had no special comments on the terms of the Amendment Agreement and that Treasury's position was already reflected in the views it had previously identified during consultation on other similar Corporation financial assistance agreements. As Treasury representatives had been informed prior to Board action, these views had been fully taken into account by the Corporation in the Amendment Agreement. In fact, as shown by Secretary of the Treasury's December 17, 1985 letter to Chairman providing the Secretary's "consultation," that assumption by the Corporation was correct; and the Board in fact had before it the substance of all consultative comments Treasury had made or would ever make concerning the financial assistance for Union when it acted on October 16, 1985. Under these circumstances it is our opinion that a court could conclude that the Corporation fulfilled the requirement that its efforts to minimize, to the maximum feasible extent, the impact of the terms of the Amendment Agreement on U.S. capital markets be "in consultation with the Secretary of the Treasury," or at least that any failure of consultation was not the responsibility of the Corporation.

Even if one were to differ on whether the Corporation's actions to minimize the impact on the capital markets of the U.S. were "in consultation with the Secretary" a court, in resolving the issue, would in all likelihood in these circumstances as noted below defer to the Board, which has determined in its findings prior to approving the Amendment Agreement that the consultative aspects of Section 131(q) had been fulfilled.

First, the scant legislative history regarding Section 131(q) indicates that this Section was intended to establish direction to the Corporation on how to proceed in awarding financial assistance rather than grounds for litigation to upset Corporation action. The Senate, in considering S. 932, a Bill to extend the Defense Production Act of 1950, as amended, which was enacted as the ESA, Pub. L. 96-294, reported the following colloquy on the Senate floor concerning Senator McClure's Amendment No. 772 to S. 932 which added Section 131(q) to this Bill:

> Mr. Johnston. Mr. President, I would first ask of the Senator from Idaho, and I think this is clear from his language, that this does not create a set of criteria for lawsuits against the corporation, but, rather, describes in greater detail and with more restriction the conditions under which the subsidization, whether by loans, price guarantees, et cetera, could be made.
>
> Mr. McClure. The Senator is correct.[1/]

Second, in our view the issue would ultimately be decided by a federal district court applying general principles of Federal common law, the governing law specified in Article 11.18 of the Amendment Agreement. While we have not located any specific precedent on point we believe a court would be constrained not to declare a contract between a Federal entity, such as the Corporation, and a private party void *ab initio* unless there was a "plain illegality" in the award of the contract. For example, in *American Science and Engineering, Inc.* v. *United States*, 663 F.2d 82 (1981), the Government in a breach of contract action argued that a discretionary determination made by an Assistant Secretary was not proper and that therefore the agency had exceeded its authority in awarding an exclusive license and that its award was a nullity. The court stated:

> The government's argument is defective. It is now settled law that this court will not declare a contract between the government and a private party void *ab initio* unless there was "plain illegality" in the contract. *John Reiner & Co.* v. *United States*, 163 Ct. Cl. 381, 386, 325 F.2d 438, 440 (1963), *cert. denied*, 377 U.S. 931 (1964); *Brown & Son Electric Co.* v. *United States*, 163 Ct Cl. 465, 469, 325 F.2d 446, 450 (1963). As this court noted in *Reiner*, "If the contracting officer has viewed the award as lawful, and it is reasonable to take that position under the legislation and regulations, the court should normally follow suit." 163 Ct. Cl. at 386, 325 F.2d at 440.

[1/] Committee on Banking, Finance and Urban Affairs, House of Representatives, 96th Cong.; 2d Sess., Compilation of the Energy Security Act of 1980, and 1980 Amendments to the Defense Production Act of 1950, Pt. 2 at 1470-72 (Comm. Print 96-17).

Quite apart from how a court would rule on whether consultation had in fact occurred, in our opinion a Court would not find that any putative defect in the Corporation's approval and execution of the Amendment Agreement would be grounds for its invalidation. Instead, the validity of the Amendment Agreement would be upheld by reason of the incontestability provision of Section 131(d) of the ESA which provides --

> Subject to the conditions of any contract for financial assistance, such contract shall be incontestable in the hands of the holder, except as to fraud or material misrepresentation on the part of the holder.

Incontestability clauses, such as Section 131(d), are normally utilized for the benefit of the holder to protect holders of guaranteed debt or other instruments from arguments that some imperfection in the chain of title or otherwise renders the instrument void. Excepted from such incontestability provisions are specified conditions, such as fraud or material misrepresentation on the part of the holder. The holder is still subject to the requirements or conditions of the guarantee and may claim payment only according to the requirements or conditions of the guarantee (Brunswick Bank & Trust Co. v. United States 707 F.2d 1355 (D.C. Cir. 1983)).

The Amendment Agreement and Section 131(d) follow this general pattern. The incontestability provision of Section 131(d) covers Union as a holder of the Amendment Agreement, and Article 3.9 of the Amendment Agreement so provides. Section 131(d) states that it is "subject to" the conditions of the financial assistance contract. Nowhere in the Amendment Agreement is the occurrence of consultation with Treasury a condition limiting the applicability of the incontestability language of Section 131(d). While we are unaware of any decision which considers whether an incontestability clause may be used by a holder against alleged internal procedural irregularities on the part of the guarantor, the plain language of this clause would bar the contest of such imperfections.

The only similar use of an incontestability clause we have identified is in insurance policies to protect the insured, after a stated lapse in time, against an insurer's nullification of the insurance contract. There is general recognition that the meaning of the incontestability clause in insurance policies is as follows:

> [M]ost courts today hold that an incontestability clause forecloses contest of the validity of the policy, as intended, but does not preclude the insurer from defending on the ground that the loss incurred was expressly excluded from or clearly never covered under the terms of the policy; i.e., the policy is a perfectly good policy and completely incontestable (except for rights expressly reserved therein), but it does not and never did cover the particular casualty on which the plaintiff is suing.

> 7 Williston On Contracts §912, at 404 (W. Jaeger 3d ed. 1961).

In our view a court would similarly hold that the incontestability clause of Section 131(d) forecloses a contest of the validity of the Amendment Agreement based on lack of consultation with Treasury. The incontestability clause might not foreclose a contest over the authority to issue an assistance award or commitment where there was a fundamental flaw in the statutory authority to issue the award or commitment. However, where as is the case here, (a) the procedural error is not one in which the holder participated or was a party, (b) the Corporation has represented, as it has in Article 3.9 of the Amendment Agreement, that it has obtained consultation from every governmental authority which is necessary under existing law in order to execute and deliver the Amendment Agreement, and (c) the Corporation has further represented that the Amendment Agreement is a legal, valid and binding obigation of the Corporation, we believe a court would apply the incontestability clause to bar any assertion that a hidden defect contradicting these representations unknown to the holder renders the Amendment Agreement invalid.

Accordingly we believe that regardless of whether it might be determined that adequate consultation had occurred between the Corporation and the Secretary of the Treasury, the Amendment Amendment is a valid and legally binding award or commitment of the Corporation under the ESA enforceable in accordance with its terms.

II. Commitment to Execute a Guaranteed Loan Agreement

If, as we conclude, the Amendment Agreement will not be held invalid by reason of the events related to the consultation requirements, it still remains to be determined whether the Amendment Agreement, by its terms, constitutes a binding contract or commitment to proceed with the drafting, approval and execution of the Guaranteed Loan Agreement and attendant Collateral Agreements. In this regard the Corporation has obtained the opinion of Messrs. Schiff, Hardin and Waite, who serve as Special Counsel to the Corporation in connection with the Amendment Agreement. Their opinion, a copy of which is attached, concludes that, assuming the validity of execution of the Amendment Agreement under the ESA, the terms of the Amendment Agreement constitutes a legal, valid and binding obligation to proceed with approval and execution of the Guaranteed Loan Agreement and attendant Collateral Agreements as a matter of applicable general contract law. We have reviewed this opinion and agree with its reasoning and its conclusion that the Amendment Agreement's commitment to execute the Guaranteed Loan Agreement and attendant Collateral Agreements constitutes a legal, valid and binding commitment, contract and obligation of the Corporation.

III. The Prohibitions of the Continuing Resolution

The Continuing Resolution provisions pertaining to the Department of Interior and Related Agencies in Title II- Related Agencies under the head "Department of Treasury, Energy Security Reserve (Including Rescission)" states in part as follows:

> That notwithstanding Section 191 of the Energy Security Act (Public Law 96-294), effective the date of enactment of this Act, the Board may not make any legally binding awards or commitments for financial assistance (including any changes in an existing award or commitment) pursuant to the Energy Security Act for synthetic fuel project proposals, except that nothing in this Act shall impair or alter the powers, duties, rights, obligations, privileges, or liabilities of the Corporation, its Board or Chairman, or project sponsors in the performance and completion of the terms and undertakings of a legally binding award or commitment entered into prior to the date of enactment of this Act;

The Continuing Resolution's general prohibition on the making of any new legally binding awards or commitments provides the express exception that nothing in this Act shall impair or alter the powers, duties, rights and obligations of the Corporation, its Board and Chairman "in the performance and completion of the terms and undertakings of a legally binding award or commitment entered into prior to the date of enactment of the Act." Thus, where (1) Corporation or Board action constitutes performance and completion of terms and undertakings of a financial assistance award or contract, (2) the financial assistance agreement was a legally binding award or commitment, and (3) the financial assistance agreement was entered into prior to December 19, 1985, the plain meaning of the exception clause excludes such actions from the general legislative prohibition.

In the case of the Amendment Agreement, the terms and undertakings of Union and the Corporation under the Amendment Agreement call for execution of the Guaranteed Loan Agreement with the attendant Collateral Agreements. As discussed in Part I and II of this memorandum, we have concluded that the Amendment Agreement was validly executed and is a legally enforceable award or commitment of the Corporation. Finally, the Amendment Agreement was executed on October 16, 1985, prior to December 19, 1985. Under a literal or plain meaning reading of the words of the exception clause, the Board of Directors may approve and the Corporation may now enter into the Guaranteed Loan Agreement and the Collateral Agreements.

The literal reading is buttressed by another provision that suggests that the Continuing Resolution contemplated that the exception clause covered acts to complete the arrangements of financial agreements. The Continuing Resolution also provides:

> That to the extent that the Secretary of the Treasury may be required to take an action under Section 131(q) of the Energy Security Act in connection with such awards or commitments, the Secretary shall complete such action within 30 days of enactment of this Act....

The only action required of the Secretary under Section 131(q) is consultation with the Corporation relating to impact on the capital markets discussed on Part I of this memorandum. It occurs in connection with setting the terms of financial assistance agreements. This consultation would be appropriate only in cases where completion of the terms of binding awards and commitments involved the setting of terms having a potential impact on capital markets. The Union Amendment Agreement, and possibly only this Agreement, would fit within this category.

Under the "plain meaning rule" of statutory interpretation, there is no need to examine legislative history or other interpretive aids where the meaning of legislation is clear on its face. See Blum v. Stenson, ___ U.S. ___, 104 S.Ct. 1541 (1984); Maine v. Thibout, 448 U.S. 1 (1980). Nevertheless a review of the legislative history surrounding enactment of the prohibition and its exception clause confirms that the provision's plain meaning is in fact the meaning understood and intended by both Houses of the Congress.

The Conference Report on the Continuing Resolution simply provided the general statement that "the Board of Directors may not make any legally binding awards and commitments for financial assistance as of the date of enactment of this Act," without any mention or discussion of the exception clause (Conference Report H.R. Rep. No. 99-450 (To Accompany H.R.J.Res. 465), House of Representatives, 99th Cong., 1st Sess., December 19, 1985, at 304-305). House debate on the Continuing Resolution includes a colloquy between Representative Sharp and Representative Yates, a House conferee on H.R.J. Res. 465 and Chairman of the House Interior Appropriations Subcommittee, which specifically addresses the applicability of what became the exception clause to the issue of further action on financial assistance to Union.

> Mr. Sharp. Mr. Speaker, I want to ask the chairman a question about the Synthetic Fuels Corporation and to just double check this.
>
> First, does the gentleman agree that the bill does not say that the SFC's action on Union I was or was not a legally binding commitment. That question ultimately lies, in case of any dispute, with the courts and general contract law. Thus, if the SFC's action was not a legally binding commitment, then nothing more can be done by the SFC regarding Union I in the 60 days after enactment.

> MR. YATES. Mr. Speaker, if the gentleman will yield that is my understanding. The gentleman is correct.
>
> MR. SHARP. Second, the conferees have agreed that even if an action such as the Union action was a legally binding contract before enactment, the Board still can only take actions in the 2 months after enactment, that are required in the preenactment contract, without any substantive change.
>
> MR. YATES. That is my impression of the intention of the conferees.
>
> MR. SHARP. Mr. Speaker, if the gentleman will bear with me, even if the November 7 Union action was legally binding, which I do not believe what [sic] the case, binding on the SFC, then no change can be made in that commitment or award by the SFC Board in the 2 months after enactment of this resolution.
>
> MR. YATES. In my opinion, that is the intent of the conferees.
>
> 131 Cong. Rec. H12187 (daily ed., Dec. 16, 1985).

This colloquy provides a clear indication by one of the House conferees that the intention of the conferees was that the authority of the Board and the Corporation to take further action on financial assistance to Union would turn on whether the Corporation was contractually obligated to take such further action. The issue of whether the Amendment Agreement was such a binding contract, and what further action it required, would be decided not by Congress, but would turn on principles of contract law. Representative Sharp reiterated this interpretation in an insert in the Congressional Record:

> No new legally binding awards can be made after enactment, and changes cannot be made to preenactment awards. However, the Board can, during the month [sic] after enactment, perform and complete the terms and undertakings of legally binding preenactment contracts, if the preenactment contract required it to do so.
>
> At least one preenactment action by the SFC is at issue--the attempted Union 1 award of $500 million on November 7 [sic].
>
> The bill does not say that the SFC's action on Union 1 was or was not a legally binding commitment. That question ultimately lies, in case of any dispute, with the courts and general contract law.

> If the SFC's action was not a legally binding commitment, then nothing more can be done by the SFC regarding Union 1 in the 60 days after enactment.
>
> If the Union 1 award of November 7, 1985, was a legally binding commitment, then the question still remains: Did that preenactment commitment bind and require the Board to take whatever specific action it may attempt to take, regarding Union 1, in the 2 months after enactment? If not, the attempted Board action is not allowed by this resolution.
>
> If any event -- and even if the November 7 action was legally binding on the SFC -- no change can be made in that commitment or award by the SFC Board in the 2 months after enactment of this resolution.
>
> 131 Cong. Rec. H12187 (daily ed., Dec. 16, 1985).

Additional colloquy occurred between Representative Synar and Representative Conte, who was also a conferee on H.R.J. Res. 465:

> Mr. SYNAR. Is it the gentleman's understanding that projects with legally binding contracts for financial aid from the U.S. Synfuels Corporation would not be affected by this legislation?
>
> Mr. CONTE. Yes; that is my understanding of the conferees' intent.
>
> Mr. SYNAR. What about a project for which the SFC had approved a package of loan guarantees and price supports, but for which no loan guarantee contract had yet been executed. Is it correct that under this legislation, such a project would not be deemed to have a legally binding contract.
>
> Mr. CONTE. Yes; that is correct.
>
> Mr. SYNAR. Finally, what about a project for which the SFC has approved a package of loan and price guarantees, but the sponsors of that project now wish to change the terms of the package previously approved by the SFC. My understanding is that no such changes could be made after the date of enactment of this legislation. Is that correct?
>
> Mr. CONTE. Yes; that is correct.
>
> 131 Cong. Rec. H13022 (daily ed., Dec. 19, 1985).

Mr. Synar's hypothetical, however, posed a situation where a support package had been approved by the Board but did not address whether contracts had been executed. In the case of the Amendment Agreement the commitment had not only been approved but approval had been followed by the execution of binding contracts.

The potential impact of the exception clause on the Union financial assistance agreement also received substantial attention on the Senate side. The Congressional Record contains two statements concerning the exception clause and its application to the Amendment by Senator McClure, one of the Senate conferees on H.R.J. Res. 465 and the Chairman of the Senate Interior Appropriations Subcommittee:

> The Corporation has entered into a legal binding financial assistance award for the Union Oil Parachute Creek Oil Shale project which obligates the Corporation to pay up to $500 million in price guarantee payments for the production of shale oil from new improved facilities to be constructed by Union Oil Company at its existing oil shale facility in Colorado. This award also legally commits the Corporation to use its best efforts to complete documentation of the terms of a loan guarantee, and execute the loan guarantee agreement, of up to $327 million within the $500 million in obligational authority available for the price guarantee payments. The language of the provision preserves the Corporation's obligation to complete the terms of the Union Oil loan guarantee agreement. Further, it recognizes the need for consultation with the Secretary of the Treasury on the interest rate, timing, and substantial terms of the loan guarantee, and requires that the Secretary provide such consultation within 30 days of enactment of this provision.
>
> 131 Cong. Rec. S18145 (daily ed., Dec. 19, 1985).

Finally, in the Senate debates on the legislation, the impact of the exception clause on the Amendment Agreement was also discussed. The following is the text of a colloquy between Senator Armstrong and Senator McClure:

> MR. ARMSTRONG. Am I correct that under this bill the agreement between Union Oil Co. and the Synthetic Fuels Corporation will be honored by the Government and will be funded according to the terms of their October 1985 agreement?
>
> MR. McCLURE. Yes, you are correct.

MR. ARMSTRONG. I also understand that the Synthetic Fuels Corporation will have authority to complete documentation necessary in accordance with its agreement with Union Oil Co. and that the Treasury is obligated to honor the Corporation's commitment. Is my understanding correct?

MR. McCLURE. Yes, it is.

MR. ARMSTRONG. The SFC has awarded Union an agreement committing the Corporation to make price guarantee payments and to execute a guaranteed loan agreement upon fulfillment of conditions to the satisfaction of the SFC Board of Directors. I understand that the conditions to the execution of the guaranteed loan agreement are set forth in the October 16, 1985 agreement executed by the parties.

Is this the situation contemplated by the language in the continuing resolution which states that "nothing in this act shall impair or alter the powers, duties, rights, obligations, privileges or liabilities of the Corporation (its Board or Chairman or Project Sponsor) in the preformance [sic] and completion of terms and undertakings of a legally binding award or commitment."

MR. McCLURE. The Union amendment agreement executed by SFC and Union Oil on October 16, 1985, is in fact a commitment contemplated by the cited proviso. This proviso permits that the completion of the terms of legally binding awards or commitments previously executed by the loan guarantee agreement covered by the October 16, 1985, agreement would not increase the Government's fiscal obligation as the loan guarantee amount is within the funds obligated for this project by the SFC.

MR. ARMSTRONG. And this is true although the actual financial documents for the loan guarantee have not been signed and completed and the agreement executed by the Corporation and Union Oil Co.?

MR. McCLURE. That is true. It is our intent and in fact the intent of the Administration that the Union Oil Co. agreement of October 16, 1985, with the Synthetic Fuels Corporation will be fully honored.

131 Cong. Rec. S18143 (daily ed., Dec. 19, 1985).

What emerges from Senator McClure's statement and colloquy with Senator Armstrong is not just the view that the Amendment Agreement was a legally binding award, but also that the exception clause was inserted in the termination provisions specifically to permit the Corporation's execution of the Guaranteed Loan Agreement and the Collateral Agreements. Indeed, in view of the facts existing at the time of the exception clause's enactment, it is difficult to understand it to have any other purpose. While there were other agreements for financial assistance between the Corporation and project sponsors which by their terms required Corporation performance, the Amendment Agreement was the only such arrangement which required the completion of further documentation and had the potential for further Treasury consultation. Thus, if the "completion" language of the exception clause and the mandate to Treasury to complete consultation under Section 131(q) within thirty days of enactment were not intended to address completion of the arrangement for financial assistance for Union, they have no meaning whatsoever.

In summary, the Senate was clearly informed that the exception clause permitted the execution of the Guaranteed Loan Agreement and the Collateral Agreements. The House quite clearly was informed that the exception clause would have this effect if the Amendment Agreement was a legally binding contract which required the execution of the Guaranteed Loan Agreement and attendant Collateral Agreements. Thus, the legislative history is consistent with the plain meaning of the exception clause: if the Amendment Agreement is a binding commitment or award of financial assistance, the Guaranteed Loan Agreement and the Collateral Agreements may be executed; if it is not, they may not be.

IV. Availability of Funds for the Union Loan Guarantee

The Continuing Resolution also rescinds all the Corporation's funds not obligated as of the date of enactment except for--

> (2) such amounts as may be necessary to make payments for synthetic fuels projects or modules for which legally binding awards or commitments for financial assistance were entered into under title I of the Energy Security Act before the date of enactment of this Act; and (3) $10,000,000 to be used to terminate the Corporation in accordance with subtitle J of the Energy Security Act....

The Amendment Agreement entered into by the Corporation and Union establishes $500,000,000 as the maximum Corporation liability pursuant to Section 152(b) of the ESA and provides that $327,000,000 of this amount shall be the maximum loan guarantee liability of the Corporation for the payment of principal and interest on debt of Union guaranteed in accordance with the Amendment Agreement. Since the Union loan guarantee commitment is within the funds already committed for price guarantees under the Amendment Agreement, the rescission of unobligated and uncommitted Corporation funds by the Continuing Resolution does not affect the execution of the Guaranteed Loan Agreement. In any case, since we also conclude that the Amendment Agreement constitutes a legally binding commitment for loan guarantees, amounts necessary to make payments in connection with the loan guarantee have been exempted from rescission.

V. Conclusion

Having reviewed the Amendment Agreement and the circumstances attendant to its approval by the Board of Directors and execution by the Chairman on behalf of the Corporation, we have concluded that the Amendment Agreement is a valid and legally binding award or commitment of the Corporation enforceable in accordance with its terms, that the commitment in the Amendment Agreement to execute the Guaranteed Loan Agreement with attendant Collateral Agreements constitutes a legal, valid and binding commitment, contract and obligation of the Corporation, and that the provisions pertaining to the Corporation in Pub. L. No. 99-190 do not bar Board action to approve, and the Corporation to execute, the Guaranteed Loan Agreement and Collateral Agreements.

Attachments

United States
Synthetic Fuels Corporation

January 16, 1986

MEMORANDUM FOR LEN RAWICZ

FROM: Jim Groelinger

SUBJECT: Union Financial Assistance Agreement
Treasury Consultation Process

This memorandum presents my participation in, and the methodology used for, the process and analysis underlying the assessment of the impact on U.S. capital markets of the Corporation financial assistance awarded to Union's Parachute Creek Program.

1. Copies of a substantially complete Amendment Agreement providing for price guarantee and loan guarantee assistance were provided to Treasury on October 3, 1985.

2. During the week of October 7, 1985, a meeting was scheduled by Charles Cowan with Ms. Jill Ouseley, Department of the Treasury, for Friday, October 11, to take place in Jill's office at the Treasury Department.

3. During morning of October 11, I received a call from Jill Ouseley indicating that Treasury would be unable to hold the meeting as other issues were taking precedence (agriculture, debt ceiling). I asked if we could reschedule the meeting for Tuesday, October 15 (Monday, October 14 was the Columbus Day holiday for Treasury), and she indicated that she didn't think so but that the documents seemed to be relatively straightforward and she did not believe there was any need for a meeting. When I asked if that meant that no further discussions were necessary, she said that the discussion we were having during that conversation should not be taken to be a "consultation". In reply to a question of when we would be hearing from Treasury, she indicated that she was trying to get people to focus on the matter, and that we should be hearing on Tuesday, and that she was certain that, if we did not hear from them, she would be hearing from me. I said I was sure that would be the case and pointed out that the scheduled meeting which she had now cancelled and the subsequent discussions were preparatory to the Board meeting scheduled for Wednesday, October 16 at which the Union arrangement was to be acted on.

4. The morning of Tuesday, October 15, at approximately 10:30 I, with Jeanine Matte, called Jill Ouseley; she was working on other matters and said she would call back immediately. She did not do so. Later in the morning, I believe about 11:30, Jeanine and I placed another call to Jill, she was on a call; we called again about 11:50, Jill was working on documents related to a Marad ship closing, asked us to hold, we did, she came back to us and asked questions regarding the nature of the loan

guarantee assistance - type of guaranteed lender, public or private placement, rate, etc.; we pointed out that Schedule 6.2 of the Amendment Agreement specified certain terms that the guaranteed loan would have to meet and included a form of loan guarantee agreement. We discussed that Union was looking to a commercial bank as the source of the funds, and that the bank might roll the loan over to an institution after construction was complete, but that the bank would more likely stay in place as the lender, and the rollover would not be the equivalent of a secondary offering. Jill asked whether the bank would be servicing the loan and we indicated that the Corporation services the loan; Jill volunteered that that meant there should be no rate premium to compensate the bank for services and we confirmed that to be our belief. We discussed the fees to be paid by Union (fee at closing, loan guarantee fee); that no borrowings were anticipated until late 1986 at the earliest; that the price guarantee arrangements were similar to those Treasury had seen before, most recently in Forest Hill, and that Union was prohibited from pledging the Corporation's commitment to make price guarantee payments. Further, we discussed the issues that had been raised by Treasury with respect to the Forest Hill loan guarantee, pointed out that the Corporation (a) had again considered less than a 100% loan guarantee and found it to be unachievable, (b) was prohibited from utilizing the Federal Financing Bank for the 100% loan guarantee that was necessary, and (c) had acquainted Union with OMB Circular A-70 and that Union had included a representation in its Information Memorandum indicating that it was familiar with the Circular and would make efforts to ensure competition among lenders to secure the best possible rate and terms. Jill indicated that the discussion was helpful, she would discuss the answers with people evaluating the matter and get back to us, but that they were having difficulty evaluating the loan guarantee situation since all of the documents were not in front of them.

5. We heard nothing from Treasury until I called again in the afternoon, at which time Jill indicated that Treasury was too busy with other things, and that I could call John Niehenke, Acting Assistant Secretary (Domestic Finance). Again, I pointed out that the discussions we were having, and trying to have, with Treasury were preparatory to getting the consultation completed prior to the Board meeting scheduled for the next day to take action on the Union arrangement. I asked Jill if she could offer comments on at least the price guarantee portion of the transaction. She responded that she was not authorized to agree on the arrangements for the consultation or on the possible separation of consultation on the loan and price guarantee aspects, and that a political level (political appointee) official would have to handle that.

6. I placed a call to Niehenke and was told that he was in a meeting; I left a message that I had called, specifically mentioned that I was with the Corporation, and was told that he would call back. While I was attempting to reach Niehenke, Jeanine, at my suggestion, placed a call to Jill to inquire whether Treasury had problems on the price guarantee portion of the award. Jill said that the questions she had been requested to ask us only concerned the loan guarantee. She asked

Jeanine if Jeanine's inquiries meant that the Corporation was thinking about separating consultation on the two forms of assistance and Jeanine replied that I would be talking to Niehenke and possibly would explore this.

7. When I did not hear from Niehenke by late afternoon, I called him again (possibly 6:30pm or so) and was told that he had left for the day; again I left a message. I called again the next morning at about 8:10, he wasn't in yet, I left a message indicating that it was important that I speak with him and that I would appreciate it if he called me as soon as he arrived. When I had not received a call, I called again at about 9:00am and was told that he was in a meeting; I left another message indicating that it was important that I speak with him. Prior to going to the Board meeting at about 9:20, I instructed my secretary that if a call came in from Mr. Niehenke, I should be gotten out of the Board meeting to speak with him. I did not place any further calls, and Mr. Niehenke has never called me.

8. In assessing the proposed award of loan guarantee and price guarantee assistance to the Parachute Creek Program under the requirement of Section 131(q) of the Act that "the Corporation, in consultation with the Secretary of Treasury, shall insure to the maximum extent feasible that the timing, interest rate, and substantial terms and conditions of any financial assistance will have the minimum possible impact on capital markets of the United States...", the Corporation staff prepared an analysis of the possible impact of the proposed loan guarantee and price guarantee assistance for the Parachute Creek Program on U.S. capital markets as part of its Findings Report dated October 15, 1985 (relevant portions of this report are provided in Attachment A). The Finance staff analyzed the timing and size of potential outlays projected to occur under the terms of the proposed price guarantee assistance and the timing and amount of the guaranteed securities to be issued by Union, in each case comparing such amounts to total Treasury capital market activities. In the absence of specific Treasury consultation comments on the impact on U.S. capital markets of the terms of the loan guarantee and price guarantee assistance for the Parachute Creek Program, the staff analyzed the proposed assistance award in light of previous consultation comments on prior and similar awards of Corporation loan guarantee and price guarantee assistance. Attachment A discusses such comments in detail; in general, Treasury's comments on prior similar awards of Corporation loan guarantee and price guarantee assistance had not depended on the particulars of the transaction (e.g. the amount of money involved, the disbursement procedures) but rather on general policy considerations. For price guarantees, the comments had been limited to one point: concern that price guarantee commitments should not be able to be pledged as collateral by the recipient. The terms of the price guarantee award for Parachute Creek Program, like all previous Corporation price guarantee awards, prohibited such pledges by Union. With respect to loan guarantee awards, Treasury's prior comments were again limited to one point: that the Corporation's award of a federal guarantee for 100% of the loan put such guarantees in direct competition with Treasury securities and were contrary to the federal

credit policy set forth in OMB Circular A-70 which encouraged risk taking by private lenders of guaranteed debt. The Findings Report indicated (as had been pointed out to Treasury Department representatives in response to their identical comment on the 100% loan guarantee provided to the Forest Hill Project) that Section 131(o) of the Energy Security Act specifically provides that lenders to projects assisted by the Corporation need not bear risk, that the Corporation had been unable to get guaranteed lenders to accept less than a 100% guarantee, and that the OMB Circular recognized that 100% loan guarantees may sometimes be necessary but that in such cases, the loan should be placed with the Federal Financing Bank, an approach which the Corporation is prohibited by law from doing. Again, the Circular recognized the possibility of such a circumstance and provided that in such event, the guarantor agency should require maximum competition among lenders to get the best terms for the guaranteed loan. To address this policy, Union included in its Information Memorandum a representation that it would provide the terms and standards for terms contained in the Amendment Agreement (Schedule 6.2) to a sufficient number of financial institutions to obtain the most favorable possible terms for the guaranteed loan. It is noted in this regard that the standard for interest rates and fees on the guaranteed loan specified in Schedule 6.2 required that such terms must be comparable to those of other federally guaranteed loans. The "official" consultation letter finally provided by the Treasury Department on December 17, 1985 contained only one comment, the comment on 100% loan guarantees described above. The letter was in all relevant respects identical to the consultation letter that had been received in September from Treasury regarding the Forest Hill assistance agreement which, as described above and in Attachment A, was considered by the Corporation with respect to the requirements of Section 131(q) relative to the proposed financial assistance for the Parachute Creek Program.

ATTACHMENT A

V. Treasury Consultation

The Act requires that the Corporation, in consultation with the Secretary of the Treasury, ensure to the maximum extent feasible that the timing and substantial terms and conditions of the proposed financial assistance will have the minimum possible impact on capital markets of the United States, taking into account Federal activities that directly or indirectly influence such markets. [Section 131(q)].

Union's projected usage of the Guaranteed Debt indicates a maximum annual drawdown of $124 million in 1988. Funding of the Guaranteed Loan does not represent a significant portion of capital market activities, nor should it have any impact on public or private capital markets.

Under the Corporation's median case, monthly Price Guarantee Payments will be in the range of $5 million to $20 million and maximum annual cash outlay in any single year is not likely to exceed $188 million. Quarterly Price Guarantee Payments are limited by the terms of the Amendment to $60 million escalated by PPI. Treasury borrowings to fund such assistance represents a minor portion of the Treasury's market activities.

The staff furnished copies of a materially complete draft of the Amendment to representatives of Treasury on October 3, 1985. No written response was received from Treasury. The Staff has undertaken discussions with the applicable Treasury officials who have stated that Treasury prefers to defer its analysis of the possible impacts of the timing, interest rate and substantial terms and conditions on U.S. capital markets until the terms and conditions of the Guaranteed Loan Agreement, the Guaranteed Notes and, to the extent applicable, Collateral Agreements have been completed. The terms of the price guarantee are similar to those contained in awards of price guarantee assistance to the Cool Water Coal Gasification, Dow Syngas and Forest Hill projects in that they preclude the recipient from pledging such assistance without the Corporation's consent. The Treasury Department's only capital market concern regarding prior price guarantee awards has been that before any such pledge is authorized by the Corporation, the Treasury Department should be consulted.

With respect to the loan guarantee assistance to be provided to Union, Treasury's prior views provided to the Corporation in its consultation on the loan guarantee assistance provided to the Forest Hill project were that any full faith and credit federal guarantee that covers 100 percent of the credit risk would create obligations which constituted the credit risk equivalent of Treasury securities and which would therefore directly compete with such securities. In this regard, Treasury has cited OMB Circular A-70 as providing policy guidance for Federal loan guarantee programs and in particular its provisions that are intended to encourage risk-sharing between private lenders and the Federal government guarantors by suggesting that ". . . loan guarantees should be structured so that the private lenders to bear a significant portion of the risk of loss from a default" on a guaranteed loan, with "significant" defined as equal to or greater than 20 percent of the loss.

The possibility of a lender holding a non-guaranteed portion of debt has been extensively pursued in prior negotiations with respect to other projects before the Corporation, but normal conditions of lenders require the government's lien to be subordinated; limit exercise of the Corporation's remedies of suspension or termination of price guarantee payments, limit the

Corporation's freedom to "workout" default situations in its best financial and programmatic interest or some combination of these. These conditions are considered unacceptable to the Corporation. Thus with respect to the Augumentation Program, it was not considered feasible to require a lender to hold a non-guaranteed portion of the project debt. (It is noted that some of these conditions to achieve lender willingness to accept non-guaranteed debt would violate Treasury concerns expressed in previous consultation letters on price guarantee assistance or in OMB Circular A-70.)

Section 131(o) of the Act requires that recipients of multiple forms of financial assistance from the Corporation bear a reasonable degree of risk in the construction and operation of their project. However, section 131(o) states that persons solely in the position of lender shall not be required to bear such risks.

Even with the policy position encouraging risk sharing by government guaranteed lenders, OMB Circular A-70 recognizes that 100 percent government guarantees may still be provided but such guarantees should utilize the Federal Financing Bank ("FFB") as the lender. However, the Corporation is precluded under section 131(f) of the Act from utilizing the FFB as a guaranteed lender. The circular suggests that where 100 percent government guaranteed loans are not financed through FFB, agencies should ensure that there is maximum competition among potential lenders for the financing of the guaranteed loan. Consonant with the intent expressed in the circular, Union has represented in the Information Memorandum that it will provide information with respect to the Guaranteed Debt to a sufficient number of financial institutions so as obtain the most favorable possible terms for the Guaranteed Debt.

The Staff's investigations of alternative procedures to address the various statutory requirements aimed at minimizing Corporation assistance, and negotiations with banks on loan guarantee assistance for projects generally, support a conclusion that the terms and conditions of the loan guarantee assistance will have minimum impact on U.S. capital markets to the maximum extent feasible consistent with the implementation of the Corporation's assistance program and the Act's prohibition against use of the FFB.

The Staff has performed its own analysis on the possible impact of the assistance on U S. capital markets and has taken into account previous Treasury comments on similar financial assistance awards. The Staff is of the opinion that there is an adequate basis for the Board to find that the price and loan guarantee assistance contemplated by the Amendment would, to the maximum extent feasible, have the minimum possible impact on capital markets of the United States. However, since the consultation review and comments from Treasury are incomplete, in part because the Amendment provides for a completion of loan guarantee documentation by December 31, 1985. The Staff recommends that Treasury be provided copies of the Guaranteed Loan Agreement, Guaranteed Notes and, to the extent applicable, the Collateral Agreements prior to their submission to the Board for further consultation with respect to minimizing the impacts of the assistance on U.S. capital markets and that any further comments received from the Treasury Department, to the extent practicable, be incorporated into such agreements.

Mr. YATES. If you could supply additional copies, it would be well. The memorandum speaks for itself. What is the thrust of it?

Mr. TASHMAN. The law provided that to the extent there were legally enforceable obligations or commitments of the Corporation, that the prohibition on awards, further assistance, had an exception that actions necessary to carry out those binding commitments could be carried out.

And the issue, therefore, was whether there was such a binding commitment with regard to the loan guarantee for the Union project.

The Legal Services Group analyzed the amendment agreement, entered into in October, and concluded that that amendment agreement did constitute a binding commitment for a price guarantee, and that the actions of the Corporation, in carrying out that binding commitment, fell in the exception language of the Continuing Resolution.

Mr. YATES. It was believed it was a binding commitment.

Mr. TASHMAN. Yes, sir.

Mr. YATES. Was it a binding commitment that required the additional action by the Board?

Mr. TASHMAN. Yes, sir, the amendment agreement committed the Corporation to implement the loan guarantee, negotiating and agreeing to documents that were necessary to carry it out, and that activity began in October and was completed just prior to the final Board action.

That final Board action was in the form of approval of those guarantee documents.

Mr. YATES. What is the legal effect of the appropriations bill, then? The appropriations bill forbids any new commitments, and it was felt that didn't apply to your relationship with Union Oil?

Mr. TASHMAN. Yes, sir.

Mr. YATES. Do you have any questions?

Mr. CONTE. Mr. Chairman, that was my language in the Continuing Resolution, and I think that that was a real arrogant display of contempt for the Congress when the Synfuel Board approved, ratified and made final the $500 million award for the Union Oil-sponsored Parachute Creek Project.

I thought that the conference report language was very clear: "The amounts available to the Board of Directors of the Synfuels Corporation not obligated as of the date of the enactment of this Act are rescinded"; that was the end of the quote.

There are different interpretations of the language, but I am concerned about the Board's most recent action. If the Union contract was legally binding in December when the CR was enacted, no action to ratify or modify or otherwise make final should have been necessary in January.

I would like to have an explanation of that. You are the counsel.

Mr. TASHMAN. There are two issues. One is whether the prohibition against making further awards applied to the loan guarantee portion of the Union agreement.

The second issue is, even if the exception language permitted further action by the Board, were there sufficient funds still available notwithstanding the rescission to back up that action?

We concluded that there were sufficient funds for two reasons: One, the money reserved for the price guarantee was in excess of the money that would be needed for the loan guarantee, and the transaction involved a rollover of the funds that were committed to the loan guarantee for the price guarantee.

In other words, no additional funds beyond that which was already reserved were required. That was reason number one.

Reason number two is that the rescission language exempted funds that were obligated or committed for financial assistance, and we analyzed the amendment agreement of October as giving rise to a commitment for the loan guarantee, so that those funds under the language of the rescission were not rescinded, but were retained.

So on both of those counts, we concluded that there were funds available.

Mr. CONTE. Mr. Chairman?

Would the Union Oil contract be legally binding without the Board's January meeting?

Mr. TASHMAN. The commitment to approve the loan documentation was in our view legally binding. The Board was obliged to act in good faith, to approve the documentation, if the documentation were satisfactory, and it was under those constraints that the Board proceed to review and ultimately to approve the documentation.

We believe there was a binding contract.

Mr. CONTE. Even without the January meeting?

Mr. TASHMAN. A binding contract to finalize the documentation which was then finalized.

Mr. CONTE. You are a clever lawyer. Would the contract have been binding without the January meeting? That is the question.

Mr. TASHMAN. We concluded that there was a binding obligation on the part of the Board, a binding commitment on the part of the Board.

Mr. CONTE. Was the contract binding without the January meeting?

Mr. SETHNESS. The contract for a——

Mr. CONTE. I would like to have counsel answer this. I am going to get back to you fellows later on.

Mr. TASHMAN. There was a binding obligation to approve—

Mr. CONTE. Was the contract binding without the January meeting, yes or no?

Mr. TASHMAN. The reason I am having difficulty responding, I don't know what you mean by a contract.

Mr. CONTE. If that was a binding contract without a January meeting, could they have taken you to court and sued you?

Mr. TASHMAN. We believe that they could have taken us to court and sued us, and we were under an obligation to approve the documentation, if the documentation were satisfactory. Failure to do so could give rise to a lawsuit which could have resulted in a judicial determination.

Mr. CONTE. If they didn't have the documentation, could they execute that contract?

Mr. **Tashman**. A court could have compelled the Board to approve the contract if, in fact, they had no reasonable basis for a finding to disapprove the documentation.

Mr. **Conte**. As far as the Treasury Department is concerned, Congressman Synar and I had a colloquy on the Floor of the House during the consideration of the Continuing Resolution with regard to the provisions governing legally binding contracts, and I am not going to get into the legal arguments today.

We are working on that separately, but I am concerned about Treasury's role in administering this project. Considering the uncertainty surrounding the legitimacy of the Union project, and considering the Treasury Department's fiduciary responsibility to administer legally binding projects, will the Department initiate its own legal opinion regarding the actions taken by the Board in January, or is the Department simply accepting the Synthetic Fuels Corporation counsel's view of the situation without question?

Mr. **Sethness**. Our General Counsel's Office is reviewing the question.

Mr. **Conte**. I would like to get any reports on that. I am glad to hear that. That is all I have for now, Mr. Chairman.

Mr. **Yates**. Had Union Oil indicated prior to approval by the Board, final approval, that it intended to sue to enforce its rights, if any, in the event the Board did not execute the contract?

Mr. **Tashman**. The Corporation received a letter from Union which asserted that it was its view, and the view of its counsel, that the Corporation was obliged to carry out the terms of the amendment agreement.

I don't believe the letter spoke to the question of whether there would be a lawsuit.

Mr. **Yates**. May a copy of that letter be made available?

Mr. **Tashman**. Yes, sir.

[The information follows:]

Unocal Corporation
1201 West 5th Street, P.O. Box 7600
Los Angeles, California 90051

UNOCAL®

Claude S. Brinegar
Executive Vice President

January 16, 1986

Honorable Edward E. Noble
Chairman
United States Synthetic Fuels Corporation
2121 K Street, N.W.
Washington, D.C. 20586

Dear Ed:

I understand that the Board of Directors of the United States Synthetic Fuels Corporation will meet on Tuesday, January 21, 1986, and will consider whether to approve and authorize execution of the Guaranteed Loan Agreement and collateral documents provided for in the October 16, 1985 Amendment Agreement between Union Oil Company and the Corporation. I strongly urge the Board to approve this action.

Pursuant to the Amendment Agreement, the Corporation committed to provide $500,000,000 in financial assistance to Union's shale oil project in Parachute Creek, Colorado, in addition to $400,000,000 in assistance under a prior contract. As part of that $500,000,000 in assistance, the Corporation agreed in Article 6 of the Amendment Agreement, to execute the Guaranteed Loan Agreement upon satisfaction of the conditions set forth therein. Those conditions have been satisfied. Union believes that, as the Corporation represented in section 3.9(b), the Amendment Agreement including the commitment to execute the Guaranteed Loan Agreement, is the "legal, valid, and binding obligation of the Corporation." Therefore, the Corporation should execute the Guaranteed Loan Agreement.

In Union's view, the continuing resolution recently passed by Congress (Pub. L. 99-190) does not bar the Corporation from executing the Guaranteed Loan Agreement and collateral documents. Although the continuing resolution precludes the Board from making new awards or commitments for financial assistance for synthetic fuel projects or changes in existing awards, it expressly does not "impair or alter the powers, duties, rights, obligations, privileges or liabilities of the Corporation, its Board or Chairman . . . in the performance and completion of the terms and undertakings of a legally binding award or commitment entered into prior to the date of enactment."

Plainly, to execute the Guaranteed Loan Agreement, as the Corporation agreed to do prior to enactment of this legislation, would constitute "performance and completion of the terms and undertakings" of the Amendment Agreement. Moreover, Senator McClure, who was a member of the Conference Committee that drafted this provision, specifically stated that the continuing resolution does not prohibit the Corporation from executing the Guaranteed Loan Agreement. We have discussed this issue with our general counsel and our special Washington counsel, Wilmer, Cutler & Pickering. They fully concur in this interpretation.

Union remains fully committed to the successful completion of the Parachute Creek Program. We sincerely hope and expect that the Corporation will honor its commitments as set forth in the Amendment Agreement.

Very truly yours,

CLAUDE S. BRINEGAR
Executive Vice President

CSB:nl

Mr. YATES. Did the Corporation reply to that letter other than by approving the final contract?

Mr. TASHMAN. I don't believe so, but I can confirm that for you, sir.

[The information follows:]

The Corporation did not reply to the January 16, 1986 letter from the Unocal Corporation.

Mr. YATES. All right.

At the discussion by the Board, was it indicated by anybody that the contract should not be approved, and that Union should be allowed to sue, in view of the action taken by the Congress?

Mr. TASHMAN. I don't believe so.

Mr. YATES. You were present at the discussion?

Mr. TASHMAN. Yes, sir. The issue that we addressed was whether there was a legally binding obligation rather than whether—what the specific form of relief might be, in the event there was a violation.

Mr. YATES. Were you a part of the Law Division of the Corporation? Were you the lawyer for the Corporation?

Mr. TASHMAN. I was and am the Deputy General Counsel.

Mr. YATES. You are not outside counsel?

Mr. TASHMAN. No, sir. We did engage outside counsel to advise us on a portion of the opinion, specifically the question of whether the form of the amendment agreement entered into in October under general rules of commercial law constituted a binding contract.

Their opinion will be furnished to you as part of that package. Schiff, Hardin and Waite of Chicago, was the firm.

Mr. YATES. How did they happen to be retained?

Mr. TASHMAN. We had retained them before this issue arose to advise us in connection with the award of financial assistance to Union. The thinking was that they were as familiar with the terms of the Union Oil contract as any authority, and that it would be desirable to have the benefit of their expertise.

Mr. YATES. Would you make available to the committee the copy of that legal opinion?

[COMMITTEE NOTE.—The legal opinion of Schiff, Hardin, and Waite precedes the legal opinion of the General Counsel of the Synthetic Fuels Corporation contained later in this document.]

Mr. TASHMAN. Yes, sir.

Mr. YATES. I don't think there was an answer to my question as to whether there was any discussion in the Board prior to final approval, as to whether the action taken by the Congress was so positive that the Board should not approve the loan guarantee?

Mr. TASHMAN. The question to which I responded to before was whether there was any consideration as to whether the amendment agreement was a binding obligation, and whether the alternative course of refusing to honor it was desirable.

I do not recall that being an issue. My best recollection is that the issue was; was there a binding obligation such that it would not be a violation of the rescission to act?

Mr. YATES. Was a vote taken by the Board on whether to proceed?

Mr. **Tashman**. Yes, there was a formal vote.

Mr. **Yates**. How did that vote turn out?

Mr. **Tashman**. The vote was unanimous.

Mr. **Yates**. Mr. Conte?

Mr. **Conte**. Do you have a copy of the minutes of that meeting?

Mr. **Tashman**. Not with me. A set of minutes were prepared. My understanding is that they were circulated to the Board members prior to their resignation.

I do not know as I speak whether a quorum of the Board approved the minutes as drafted, but I can check to see whether that exercise was completed before the resignation.

Mr. **Conte**. We would like to have a copy of those minutes.

[The information follows:]

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DRAFT

MINUTES
of the
MEETING
of the
BOARD OF DIRECTORS
of the
UNITED STATES SYNTHETIC FUELS CORPORATION

January 21, 1986

The meeting was convened at 10:15 a.m., January 21, 1986, in Room 503, 2121 K Street, N.W., Washington, D.C., pursuant to the call of the Chairman and after public notice of the meeting as required by Section 116(f) of the Energy Security Act (43 U.S.C. 8712(f)(1)(1983 Supp.)), published in the Federal Register. A quorum of the Board being present, Edward E. Noble, Chairman of the Board of Directors, called the meeting to order and presided. In addition to the Chairman, the following members of the Board were present:

Thomas J. Corcoran
Paul W. MacAvoy
Eric H. Reichl
Victor A. Schroeder

Leonard Rawicz, Vice President, General Counsel and Secretary, acted as Secretary of the meeting.

Chairman's Opening Remarks

The full text of the Chairman's opening remarks, as presented to the meeting, is affixed to these minutes as Attachment A.

Approval of the Minutes of November 19, 1985 Meeting

On a motion duly made by Mr. Schroeder and seconded by Mr. Corcoran, it was unanimously

> RESOLVED, that the minutes of the meeting of the Board of Directors held on November 19, 1985 be, and they hereby are, approved; and
>
> RESOLVED, that it is the judgment of the Board of Directors that those parts of the minutes of the closed portion of the meeting of the Board of Directors held on November 19, 1985 deleted from said minutes relating to the Board's deliberations respecting the ASC/Indiana, Cathedral Bluffs, Seep Ridge and Parachute Creek Projects may properly be withheld from public disclosure pursuant to the provisions of subsections 116(f)(1)(B)(ii)(II) and 116(f)(1)(C) of the Energy Security Act.

Release of Previously Withheld Closed Session Minutes

Mr. Rawicz stated that the Director of Public Disclosure had reviewed each set of minutes of closed sessions of the Board from which information had been withheld from the public. In light of the legislation abolishing the Corporation and the termination of all Corporation project negotiations, much of the previously withheld material may now be released. Mr. Corcoran asked what type of information would still be withheld. Mr. Rawicz replied that business confidential information provided by a sponsor will continue to be protected, in accordance with criteria similar to those for the Freedom of Information Act (FOIA). All information concerning Corporation negotiation strategies will be released, except for any information which might reveal trade secrets. Ms. Catherine McMillan, Director of Public Disclosure, added that some information had also been withheld if its release would constitute an unwarranted invasion of an individual's privacy or if it would compromise the competitive position of a business. Mr. Reichl asked if the project sponsors had approved the release of the material. Ms. McMillan stated that she and her staff had reviewed the material with Corporation staff responsible for the projects in question, and that she did not believe that the sponsors would differ with the Corporation's view of the sensitivity of the information. Mr. Noble commended Ms. McMillan for the swift completion of such a large task. Mr. Rawicz noted that material the Corporation continued to withhold might later be released by the Department of Treasury.

On a motion duly made by Mr. Corcoran and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the recommendations of the Director of Public Disclosure contained in the report dated January 14, 1986 and presented to this meeting, for release of portions of the minutes of the closed sessions of the Board meetings listed below, be, and they hereby are, approved.

October 28, 1981
December 11, 1981
January 18, 1982
February 16, 1982
March 26, 1982
April 26, 1982
June 17, 1982
July 15, 1982
August 19, 1982
September 17, 1982
October 18, 1982
December 2, 1982
December 20, 1982
January 20, 1983
February 17, 1983
March 24, 1983
April 13/14, 1983
May 26, 1983
June 30, 1983
July 28, 1983
August 29, 1983
September 22, 1983
October 21/22, 1983
November 30/December 1, 1983
January 5, 1984
February 16/24, 1984
March 15, 1984
April 5, 1984
April 26, 1984
December 13, 1984
January 15, 1985
February 6, 1985
February 19, 1985
March 19, 1985
April 22, 1985
May 21, 1985
May 28, 1985
June 3, 1985
June 18, 1985
July 16, 1985
August 21, 1985
September 10, 1985
September 24, 1985
October 16, 1985

Consideration of Union Oil Company Loan Guarantee

Mr. Noble stated that the Board would consider the loan guarantee portion of the Amendment Agreement executed by the Corporation and Union Oil Company of California ("Union") on October 16, 1985. The Amendment Agreement included an award of certain price guarantees to the Parachute Creek Project, on the condition that Union install and successfully operate fluidized-bed combustion technology to process spent shale. The Amendment Agreement also included a provision for loan guarantees to support construction of the fluidized-bed technology. Mr. Noble stated that the Board would examine the specific loan and guarantee terms and conditions negotiated between Union, the lender and the Corporation, and the results of the consultation process with the Department of Treasury. Mr. Noble said the Board would begin with the General Counsel's analyses of the Corporation's obligations under the October 1985 Amendment Agreement.

Mr. Rawicz stated that the Continuing Resolution (Public Law 99-190) of December 19, 1985, which terminates the Corporation, had raised a number of legal issues, which the Legal Services Group (LSG) had addressed in a draft legal opinion sent to the Board on January 14, 1986. He said the legal opinion considered whether the Amendment Agreement executed on October 16, 1985 was a valid and legally enforceable agreement, and whether the undertaking to execute a guaranteed loan agreement and collateral documents found in Article 6 of the Amendment Agreement constituted a binding commitment of the Corporation. In addition, the opinion considered whether anything in the Continuing Resolution prevented the Board from approving, and the Corporation from executing, the guaranteed loan agreement and collateral documents, and whether the necessary funding was still available in light of the rescission of funds in the Continuing Resolution.

With respect to the legality of the Amendment Agreement, Mr. Rawicz advised that the only legal issue identified pertains to the requirement in Section 131(q) of the Energy Security Act that the Corporation, in consultation with Treasury, determine that the terms of a financial assistance agreement have the minimum possible impact on U.S. capital markets. After the Corporation had approved and executed the Amendment Agreement, the Secretary of Treasury had notified the Corporation that, in his opinion, consultation had not taken place, and therefore the Amendment Agreement was not legally binding. The LSG opinion addressed the question of whether consultation had occurred, and if not, whether the Amendment Agreement would be legally valid and binding. The opinion examined the relevant facts concerning consultation and concluded that the Corporation did everything necessary to obtain consultation. The Corporation's staff had informed staff at Treasury that the Corporation had incorporated previous Treasury consultation comments on other Corporation transactions into the preparation of the Amendment Agreement, but received no formal response, and no request to delay action on the Amendment Agreement or for additional time for consultation purposes. Mr. Rawicz said that it was the view of the legal staff that the Corporation had done all that was required of it with regard to consultation and that a court would so conclude.

Even if a court were to find that consultation had not taken place, Mr. Rawicz continued, it is likely that a court would nevertheless uphold the validity of the Amendment Agreement by reason of the incontestability provision of Section 131(d) of the Energy Security Act ("ESA"), which was incorporated in the Amendment Agreement. Section 131(d) provides that all Corporation contracts for financial assistance are "incontestable in the hands of the holder, except as to fraud or material misrepresentation on the part of the holder." The Amendment Agreement is therefore a legally binding obligation of the Corporation.

To determine whether the undertaking made by the Corporation in Article 6 of the Amendment Agreement to execute a Loan and Guarantee Agreement was legally binding, Mr. Rawicz requested an opinion from outside counsel, the law firm of Schiff, Hardin and Waite ("Schiff, Hardin"). Schiff, Hardin provided the Corporation with its opinion that under applicable common law principles the undertaking was a legally binding commitment.

Schiff, Hardin relied on two closely related principles: first, whether the parties have manifested a clear intention to be legally bound; second, whether the objective manifestation of the parties' intention is sufficiently definite. Schiff, Hardin concluded that both Union and the Corporation had "clearly manifested an intention" to be bound by the Amendment Agreement, including the conditional commitment made by the Corporation in Article 6. They based this conclusion on the form and substance of the Amendment Agreement, as well as the actions of the parties prior to and subsequent to its execution. In addition, Schiff, Hardin concluded that the commitment to execute a guaranteed loan agreement was "clear and definite." The commitment was subject to certain conditions contained in the Amendment Agreement; Schiff, Hardin concluded that under applicable law the commitment would be legally enforceable provided that the conditions were precise and definite, and further determined that the conditions met that standard. Schiff, Hardin therefore concluded, and the LSG opinion concurred, that the commitment to execute the Loan and Guarantee Agreement was a valid and binding obligation of the Corporation.

Finally, the Corporation's legal staff examined in detail the Continuing Resolution, and in particular the language restricting the Corporation from entering into any new financial assistance agreements. The Continuing Resolution's general prohibition on making new, legally binding awards or commitments provided the express exception that nothing in the Act would impair or alter the powers, duties, rights and obligations of the Corporation, its Board and Chairman "in the performance and completion of the terms and undertakings of a legally binding award or commitment entered into prior to the date of enactment of the Act." Under the plain meaning of the language of this exception clause, the Board could lawfully approve the Loan and Guarantee Agreement, because the Amendment Agreement was a legally binding award validly executed prior to December 19, 1985, the date of passage of the Continuing Resolution. Nevertheless, the LSG opinion examined the legislative history of the Continuing Resolution to determine the intention of Congress with respect to the Union agreement. Mr. Rawicz summarized the substance of several colloquys in both Houses and a statement by Senator McClure concerning the agreement with Union. In essence, the Senate was clearly informed that the exception clause permitted the execution of the Loan and Guarantee Agreement and the Collateral

Agreements. The House of Representatives was informed that the exception clause would have this effect if the Amendment Agreement were a legally binding contract which required the execution of the additional documents.

Mr. Rawicz concluded that nothing in the Continuing Resolution would prohibit the Corporation from executing the commitment to execute a Loan and Guarantee Agreement, as long as the Amendment Agreement executed on October 16, 1985 is valid and enforceable, and the commitment in Article 6 is also legally binding.

Mr. Rawicz further noted that, while the Continuing Resolution rescinds almost all the Corporation's funds not committed or obligated as of December 19, 1985, funds sufficient to cover the loan guarantee were committed in connection with the price guarantees awarded by the Amendment Agreement; alternatively, the loan guarantee portion of the Amendment Agreement is itself a legally binding commitment entered into prior to December 19, 1985.

Mr. Noble asked Mr. Rawicz for his opinion on the Directors' obligation to consider the loan guarantee agreement at this time. Mr. Rawicz replied that, because the documentation has been completed, the Directors were obliged to consider it. Approval of the terms in the documentation would be discretionary. The commitment to execute a loan guarantee agreement found in Article 6 of the Amendment Agreement requires that the terms be satisfactory to the Corporation, and it is the role of the Board to make that determination. Mr. Rawicz stated that Union has found the terms to be satisfactory; if the Board were to find the terms satisfactory but not proceed with the award, Union could seek enforcement of its rights under the Amendment Agreement. If the Board were to have a legitimate reason for finding the terms unsatisfactory, Union would not have a valid basis to seek enforcement of the commitment.

Mr. MacAvoy asked if it were necessary for the Board to find that the loan agreement has a minimal adverse impact on U.S. capital markets. Mr. Rawicz replied that the Board would have to make that finding, as well as the finding that no changes have been made to the Amendment Agreement by the loan guarantee agreement. In addition, the Board would have to be satisfied with the terms and fees included in the Loan and Guarantee Agreement. Mr. MacAvoy asked if the Board was bound by the Treasury opinion when making such findings. Mr. Rawicz replied that Treasury's opinion during consultation does not bar the Board from making a decision contrary to Treasury's advice.

Mr. Reichl asked what legal view the Treasury Department would take if the Board approved the Union loan guarantee. Mr. Rawicz replied that the loan guarantee provides that, before any money is drawn on the loan, the General Counsel of the Department of Treasury will have to deliver an opinion that the agreement is legally binding and enforceable. Prior to that date, which will take place about one year from now, Treasury can seek an opinion from the Attorney General.

Mr. Corcoran asked Mr. Rawicz why he had given so much weight to Mr. Groelinger's memorandum of January 16, 1986 when determining whether or not the statutory requirement for Treasury consultation had been met. Mr. Rawicz stated that Mr. Groelinger's memorandum explained the sequence of conversations and events which took place during the time the Corporation was attempting to obtain consultation from Treasury. From the facts Mr. Groelinger presented, Mr. Rawicz concluded that an adequate attempt to get consultation occurred, and that therefore consultation had occurred. Mr. Corcoran asked if Treasury had failed to provide formal consultation on any other Corporation deal. Mr. Rawicz stated that the two parties had originally conducted consultation informally through staff meetings or by telephone, and there was no written communication. In the Forest Hill agreement, Treasury had responded in writing to the Corporation's request for consultation. The Corporation had taken into consideration Treasury's comments on prior consultations when structuring the Union Amendment Agreement. In fact, all comments in Treasury's consultation letter on the Union documents which followed passage of the December 19 Continuing Resolution were identical to those already considered by the Board and the Corporation's staff.

Mr. Andrew Tashman, Deputy General Counsel, added that the Corporation had historically received written consultations or had been advised by Treasury that its oral comments would serve. In this case, the Corporation received neither oral nor written advice that consultation had occurred, although some oral discussions were conducted with Treasury's staff. Mr. Tashman said the main question to be considered was whether it could be fairly concluded that the Corporation's efforts constituted a "good faith" effort to comply with the 131(q) requirement. Mr. Tashman said he could not say with assurance how a court would rule on the matter, but it was the opinion of the Legal Services Group that a good argument could be made that the good faith effort had been made.

Mr. Corcoran referred to the following statement in paragraph 3 of Mr. Groelinger's memorandum: "[Miss Ouseley, a Department of Treasury employee] said that the discussion we were having during that conversation should not be taken to be a 'consultation.'" Mr. Tashman agreed that lower level staff at Treasury had made it plain that their conversations did not constitute consultation. Mr. MacAvoy stated that he thought there might be substantive consultation behind Miss Ouseley's statements that Treasury was too busy to address the Union consultation request, in that Treasury might consider the impact of the Union agreement to be so miniscule that it was not worth their time to address it. Mr. Reichl stated that he could apply the legal concept of res ipsa loquitur to this situation, i.e., he felt it was obvious that the Union loan guarantee has a minimal effect on capital markets. Mr. Tashman stated that it was important to remember that the issues ultimately raised by Treasury in their letter of consultation were identical to those issues raised on other deals, all of which had been taken into consideration by the Board during their deliberations on October 16.

Mr. Corcoran asked what was the authority for the incontestability clause in the Union Amendment Agreement. Mr. Tashman replied that Section 131(d) of the ESA makes Corporation financial assistance agreements incontestable in the hands of the holder subject to exceptions not here relevant, and that provision had been incorporated in the Amendment Agreement.

Mr. Corcoran asked what the legal status of the Amendment Agreement would be if the events between the Corporation and Treasury, as detailed in Mr. Groelinger's memorandum, had never occurred. Mr. Tashman replied that, regardless of whether consultation took place, the incontestability clause would still govern. He stressed that the incontestability clause does not preclude all contests concerning the contract. The language of 131(d) says the clause is "subject to the terms and conditions of the contract." Consultation with Treasury was not specified as a term or condition of the contract. Mr. Rawicz noted that while contracts generally do not contain incontestability clauses, they are provided for in a number of other federal statutes dealing with guaranteed loans and are generally found in life insurance policies.

Mr. Tashman reiterated that the issue concerning Treasury consultation remained subject to dispute, although the Corporation's legal staff feels that a strong case can be made that a Court would conclude that consultation had occurred. In any case, the incontestability clause would control in any disagreement over consultation. Mr. Schroeder asked if the statutory language requiring federal agencies to comment within 30 days on Corporation actions applied in this case. Mr. Rawicz said that the 30-day limit does not apply to Treasury.

Mr. Corcoran asked why the Corporation had selected Schiff, Hardin and Waite to consider the legality of the commitment in the Amendment Agreement. Mr. Rawicz replied that Schiff, Hardin personnel had acted as the Corporation's outside counsel on the Parachute Creek Project for years, and hence were very aware of the intricacies of the Amendment Agreement, in addition to being well-known as experts in packaging financial documents. Mr. Corcoran asked why the Corporation had limited Schiff, Hardin's inquiry to the issue of whether the Amendment Agreement was a binding agreement under contract law. Mr. Tashman replied that the staff had felt that the Corporation's legal staff was most expert in interpreting the ESA and other legislative activity, but desired the assistance of outside counsel for interpretation of the contract law question.

Mr. Noble then turned the discussion to the actual terms and conditions of the Loan and Guarantee Agreement. Mr. Frank Hill, Director of Finance, said that the general provisions in the Amendment Agreement, as reviewed by the Board on October 16, had been implemented in the Loan and Guarantee Agreement and the Collateral Agreement. Between October 16 and December 19, certain changes to the Amendment Agreement had been negotiated with Union and the lender to improve the agreements and facilitate their administration. Those changes were made in the draft agreements sent to the Board in early December. Following passage of the December 19 Continuing Resolution, however, those changes were reversed, to ensure that the Amendment Agreement approved on October 16 will be implemented literally, in accordance with the language in the Continuing Resolution precluding changes in existing Corporation awards.

(Mr. MacAvoy left the meeting.)

Mr. Corcoran asked Mr. Hill to characterize the revisions which were now reversed. Mr. Hill explained that the changes had been mostly administrative in nature. Mr. Groelinger stated that all the changes were described in the Amendment to the Supplementary Findings Report. Mr. Philipp von Turk, Assistant General Counsel, said the staff had exercised an "abundance of caution" to ensure that the terms of the new documents were in strict accordance with the Continuing Resolution. He said it was very possible that the technical changes under discussion might not be considered "changes" under the Continiuing Resolution. The staff, however, thought it was best to eliminate any potential for dispute by rescinding them.

Mr. Reichl noted, on page 4 of the Loan and Guarantee Agreement, that the interest rate on the loan could be set as a percentage of LIBOR or the rate on Federal Certificates of Deposit. (Mr. Rawicz left the meeting.) He asked how the actual rate would be selected. Mr. Hill replied that the rate was at the option of the borrower, who would obviously pick the lower of the two. Mr. Corcoran asked how the percentages were set. Mr. Groelinger said the rates were a result of a negotiation between Union and the lender, Manufacturers Hanover Trust. (Mr. Rawicz returned to the meeting.) Mr. Reichl asked if the interest rates represented an unreasonable cost of money. Mr. Groelinger said the interest rate had been addressed at the October meeting, and that the issue to be decided today was whether the magnitude of the financing would have a significant impact on capital markets. (Mr. MacAvoy returned to the meeting.) Mr. Groelinger and Mr. Hill agreed that the Manufacturers Hanover package of interest rates and management fees was the most favorable proposal Union had received.

Mr. MacAvoy asked how Treasury assesses the minimal impact of a financial assistance arrangement on U.S. capital markets. Mr. Groelinger stated that Treasury seemingly defines "minimal impact" as "zero impact." Treasury also has opined that offering any government-guaranteed securities with an interest rate higher than the Treasury rate has an impact on the market, and therefore the impact is more than minimal. Mr. MacAvoy stated that he also understood that to be Treasury's method, but that it could not be correct. He stated that their method was based on the notion of a negatively-sloped demand curve for federal debt instruments, activated by even the slightest differentiation between two instruments. According to the Treasury scenario, a small premium on the Corporation's $300 million loan guarantee would affect the rate on all new Treasury debt issues, which currently net about $225 billion of new debt plus a roll-over of $150 billion. Mr. MacAvoy stated that the Treasury advice was misleading. He asked if that were the way the Corporation's staff analyzed an issue's impact on capital markets. Mr. Groelinger said it was not, and was also not the analysis he had expected from Treasury.

Mr. Corcoran noted that page 8 of the Supplementary Staff Findings Report implies that a potential lender had submitted a lower proposed interest rate for the Union loan. Mr. Hill said that was correct, but the same potential lender included a set $300,000 annual management fee, regardless of the amount of funds outstanding on the loan. The impact of that fee would have been to add approximately $500,000 to the charge for the loan. When all factors were considered, the Manufacturers Hanover proposal was superior.

Mr. Noble requested Mr. Groelinger to review the factors considered by the Corporation when evaluating the impact of a Corporation assistance agreement on capital markets. Mr. Groelinger explained that the Corporation and Union agreed to achieve competition between potential lenders in order to secure the lowest possible cost of borrowing. Both parties concluded that the guaranteed loan is a bank instrument which is not remarketed, and therefore does not compete in the marketplace with Treasury issues. Mr. Groelinger added that Treasury had been concerned about the pledging of price guarantee funds, and that pledging is prohibited in this transaction.

Mr. Noble noted that, while the guaranteed debt was available to Union only for construction of a fluidized-bed combuster, the retort and related equipment were collateral for the loan, and a complex Operating Agreement had been executed by Union and the Corporation. Mr. Groelinger replied that, as a general principle, if Corporation assistance includes loan guarantees, that debt must be backed by collateral sufficient to constitute an operating synthetic fuel plant. In the Union case, the Corporation's collateral constitutes sufficient facilities to process shale into shale oil. The Operating Agreement ensures the Corporation that it has the basic structure to process the shale, plus the availability of shale resource at a fair price and access to upgrading facilities.

Mr. Corcoran noted that the Corporation has first lien on all equipment at the Parachute Creek bench site, and asked whether there were other liens on the property. Mr. von Turk replied that the Corporation had looked into that question carefully when preparing the Amendment Agreement, in order to confirm Union's representation that there were no such liens. Prior to any drawdown of guaranteed debt, Union's General Counsel must issue a fresh opinion on that matter. Mr. von Turk verified for Mr. Corcoran that, other than permitted minor encumbrances, there are no other liens on the property. Mr. Reichl noted that any Corporation lien is secondary to unpaid contractors' liens. Mr. Hill emphasized that the existing Parachute Creek facilities were built with 100 percent equity. (Mr. Reichl left the meeting.)

Mr. Noble asked what would happen if the guaranteed debt were not made available to Union. Mr. Groelinger replied that the decision was Union's, but that it is the Corporation's judgment that Union probably would not complete the Augmentation Program without the guaranteed debt.

Mr. Noble asked Mr. von Turk to explain what conditions would have to be fulfilled before the initial disbursement. Mr. von Turk replied that the conditions were listed on page 31 of the Guaranteed Loan Agreement, and included the issuance of a number of certificates and opinions, payment of certain fees, and re-publication of various representations and warranties. Mr. von Turk noted a provision on page 14 which allowed the banks the opportunity to consider whether, in their reasonable judgment, there is a question as to the validity, legality or enforceability of the guarantee, or there is any reason to believe that if payment were properly demanded of the Guarantor, payment might not be made in accordance with its terms, without the necessity of legal proceedings. If so, the banks would have the right not to make a disbursement.

A general discussion followed concerning speculation on the potential impact of lower crude oil prices on the Parachute Creek Project.

Mr. Leonard Axelrod, Vice President - Technology and Engineering, reviewed his statement at the November 19 Board meeting concerning Union's technical progress with the existing facility and the Augmentation Program. Mr. Reichl asked if the cost estimates for the Augmentation Program had changed. Mr. Axelrod said there had been no changes. Union will select a general contractor in late February; after that selection, serious work will begin on a final estimate. Mr. Axelrod emphasized that, to date, Union is doing everything required to comply with its part of the deal.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Schroeder, it was unanimously resolved that

> WHEREAS, Public Law 99-190 prohibits the Corporation from making legally binding awards or commitments for financial assistance including any change to an existing award or commitment after December 19, 1985 but provides that nothing contained in such public law shall impair or alter the powers, duties, rights, obligations and privileges or liabilities of the Corporation, its Board, or its Chairman in the performance and completion of the terms and undertakings of a legally binding award or commitment entered into prior to December 19, 1985,
>
> WHEREAS, on October 16, 1985, the Board of Directors authorized the execution and delivery of the Amendment Agreement providing for loan guarantees and price guarantees under the Energy Security Act (the "Act") for the Union Oil Company Parachute Creek Program,
>
> WHEREAS, Pursuant to Article 6 of such Amendment Agreement the Corporation committed to subsequently execute and deliver the Guaranteed Loan Agreement subject to fulfillment of the conditions set forth therein including execution of reasonably satisfactory collateral Agreements,
>
> WHEREAS, the Amendment Agreement was executed and delivered by the Chairman on behalf of the Corporation and by duly authorized representatives of Union Oil Company of California on October 16, 1985,
>
> WHEREAS, outside counsel for the Corporation has opined that, assuming that the Amendment Agreement had been duly authorized, executed and delivered by the proper officers of Union and the Corporation, the commitment made by the Corporation pursuant to Article 6 of the Amendment Agreement to execute the Guaranteed Loan Agreement constitutes the legally, valid and binding agreement of the Corporation, such opinion as to the legal, valid and binding nature of the Corporation's commitment being limited to an opinion as to matters of general contract law and not addressing the legality of the Corporation's commitment or of fulfillment thereof under the Act,
>
> WHEREAS, the General Counsel of the Corporation has opined that the Amendment Agreement is a legally binding contract or commitment entered into prior to December 19, 1985 and that the authorization, execution and delivery of the Guaranteed Loan Agreement and the Collateral Agreements (as described below) constitutes performance and completion of terms and undertakings of such legally binding award or commitment,

WHEREAS, the resolution by the Board of Directors authorizing execution and delivery of the Amendment Agreement directed the Chairman to further consult with the Secretary of Treasury under Section 131(q) of the Act with respect to the impact on capital markets of the United States of the timing, interest rate and substantial terms and conditions of the financial assistance provided by the Amendment Agreement as further implemented by the Guaranteed Loan Agreement, Guaranteed Notes, and, to the extent applicable, the Collateral Agreements, and to incorporate, to the extent practicable, any further consultation comments of the Secretary of Treasury, and to present to the Board for its approval forms of the Guaranteed Loan Agreement, Guaranteed Notes and Collateral Agreements after such consultation and prior to execution and delivery thereof;

NOW THEREFORE, it is

RESOLVED, that the Board of Directors hereby reaffirms and restates its resolution of October 16, 1985 which authorized the execution of the Amendment Agreement and the performance of the obligations of the Corporation thereunder; and further

RESOLVED, that the Board of Directors hereby determines, (A) having completed the further consultation with the Secretary of Treasury provided for in such resolution of October 16, 1985, (i) that to the maximum extent feasible, the timing, interest rate and substantial terms and conditions of the Amendment Agreement, as further implemented by the Guaranteed Loan Agreement and the Guaranteed Notes, will have minimum possible impact on the capital markets of the United States, taking into account federal activities which directly or indirectly influence such markets and (ii) that the comments of the Secretary of Treasury pursuant to Section 131(q) of the Act have been incorporated, to the extent practicable, into the Guaranteed Loan Agreement and Guaranteed Notes, and (B) that the Guaranteed Loan Agreement, Guaranteed Notes and Collateral Agreements implement without change the relevant terms and conditions of the Amendment Agreement, and further,

RESOLVED, that the Chairman be, and he hereby is, authorized in the name and on behalf of the Corporation to execute and deliver the Guaranteed Loan Agreement and the Collateral Agreements, consisting of (i) a deed of trust, mortgage, security agreement and financing statement, (ii) a collateral operating agreement and (iii) a construction account pledge agreement, each in the respective forms presented to this meeting, with such changes thereto as may be permitted by the Act and as may be approved by the Chairman, his execution thereof with such changes to be conclusive evidence of such approval; and further

> RESOLVED, that the Chairman and other appropriate officers of the Corporation be, and each of them hereby is, authorized and directed to do and perform or cause to be done and performed, all such acts, deeds and things and to make, execute and deliver, or cause to be made, executed and delivered, such agreements, documents, certificates and instruments (including endorsement of the Guaranteed Notes) as may be necessary or appropriate to effectuate or carry out fully the purpose and intent of the foregoing resolutions, including the performance of the obligations of the Corporation under such agreements.

The meeting was recessed at 12:30 p.m.

The meeting was reconvened at 1:43 p.m.

Termination Plan and Budget

Mr. Noble summarized Corporation action to date to effect an orderly termination of the Corporation and transfer of projects and information to the Department of Treasury. He discussed the four special task forces he had appointed, including task forces on projects transfer, administration, reports and employee placement. Mr. Richard Miller, Comptroller, stated that the staff had met twice with Treasury and that the Department was planning how to cope with such things as the absorption or distribution of physical assets and FOIA materials. Mr. Hill noted that Treasury had to make some decisions concerning how they will monitor the contracts after the Corporation ceases functioning.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the Termination Plan presented to this meeting be, and it hereby is, approved; and it is further
>
> RESOLVED, that the Chairman be, and he hereby is, authorized and directed to take all steps necessary to implement said Termination Plan.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Schroeder it was unanimously

> RESOLVED, that the Termination Budget presented to this meeting, be, and it hereby is, approved; and it is further
>
> RESOLVED, that the Chairman be, and he hereby is, authorized and directed to take all steps necessary to implement said Termination Budget.

Savings and Retirement Plan

Mr. Miller stated that the Corporation's Savings and Retirement Plan should terminate on January 31, 1986, to ensure that all employee payouts can be made and a final audit can be completed by April 17, 1986. Mr. Rawicz stated that the Board would consider a resolution to modify the Savings Plan by addition of a termination article. The modified plan would be forwarded to the Internal Revenue Service (IRS) to ensure it meets the IRS code. Mr. Schroeder asked if the staff could assure him that all employees would receive their portions without having to go through Treasury to get it. Mr. Rawicz stated that there was no guarantee. Ms. Sondra Gillice, Director - Personnel, stated that the consultation with the IRS was routine for any such plan. Mr. Schroeder said he was wary of the provision in the proposed resolution which stated that the Plan would be modified to meet any IRS comments. Ms. Gillice stated that such language was pro forma in this situation, but that she agreed with Mr. Rawicz that there was no guarantee that payout would be completely trouble-free. Mr. Miller stated that all employees should receive their payout before the Corporation terminates. Mr. Noble noted that the Corporation's benefit package had been much criticized in the press, but that it has run at about 25-26 percent of payroll, compared to 46 percent for the civil service.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Reichl, it was unanimously resolved that

> WHEREAS, the United States Synthetic Fuels Corporation (the "Corporation") has established and maintains the United States Synthetic Fuels Corporation Savings Plan (the "Savings Plan"), and the United States Synthetic Fuels Corporation Retirement Plan (the "Retirement Plan") (collectively the "Plans"); and
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> WHEREAS, section 7.2 of each of the Plans provides that the Corporation may terminate the Plan at any time; and
>
> WHEREAS, the Corporation has entered into a Trust Agreement with the American Security Bank, N.A., with respect to each of the Plans (collectively the "Trust Agreements"); and
>
> WHEREAS, section 6.2 of each of the Trust Agreements provides that the Corporation may terminate it at any time;
>
> NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE UNITED STATES SYNTHETIC FUELS CORPORATION THAT:
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> 1. Effective January 31, 1986, both Plans are terminated.
>
> 2. The Savings Plan is amended by adding a new Article VIII to read as follows:
>
> "ARTICLE VIII
> "TERMINATION
>
> "8.1 Termination. Effective January 31, 1986, the Plan is terminated.
>
> "8.2 Termination Distributions. Notwithstanding any other provision of the Plan to the contrary, the total value of a Participant's Accounts shall be distributed to him, as soon as practicable after the later of the termination of the Plan or termination of employment, except that no such distribution shall be made before the Participant's Normal Retirement Date if the amount of the distribution would exceed $3,500, unless the Participant has consented in writing to the immediate distribution."

3. The Retirement Plan is amended by adding a new Article VIII to read as follows:

"ARTICLE VIII
"TERMINATION

"8.1 Termination. Effective January 31, 1986, the Plan is terminated.

"8.2 Termination Distributions. Notwithstanding any provision of the Plan to the contrary, the balance of each Participant's Account shall be distributed to him as soon as practicable after the later of the termination of the Plan or termination of employment, except that no such distribution shall be made before the Participant's Normal Retirement Date if the amount of the distribution would exceed $3,500, unless the Participant has consented in writing to the immediate distribution.

"8.3 Allocation of Forfeitures. For purposes of section 2.8, the last day of the Plan Year beginning January 1, 1986, shall be January 31, 1986."

4. An application shall be submitted to the Internal Revenue Service for a determination that the qualification of the Plans is not adversely affected by their termination.

5. The Chairman, or any person succeeding to his responsibilities, or any person authorized by him, is authorized to make, on behalf of the Corporation, any changes in the Plans or Trust Agreements that may be requested or required by the Internal Revenue Service in order to obtain a favorable determination from the Internal Revenue Service, and any other changes that he may deem necessary or desirable to assure the qualification of the Plans and Trust Agreements, and other technical and conforming changes.

Banking Resolution

On a motion duly made by Mr. MacAvoy and seconded by Mr. Reichl, it was unanimously

RESOLVED, that the general form of banking resolution with the National Savings and Trust Company, Washington, D.C. for the Corporation's account therein presented to this meeting be, and it hereby is, adopted and approved, and the Chairman is hereby delegated the authority to complete said resolution by designating such employees as shall have authority to sign checks, drafts or other orders with regard to said account.

Directors and Officers Liability Insurance

Mr. March Coleman, Assistant General Counsel-Corporate & Litigation, explained that the Directors would consider a resolution to ratify the Chairman's action of last fall to acquire Directors and Officers Liability insurance at a time when the Board was not available to act, and to authorize the Chairman to procure an extension of such insurance for up to three years. Mr. Reichl asked if the cost of the extension would be within the Corporation's Termination Budget. Mr. Coleman replied that he could not address that issue. Mr. Miller indicated that the budget would cover the costs. Mr. Noble stated that the cost of Directors and Officers Liability insurance has skyrocketed in recent months, and is a major problem for almost all businesses. He said that he personally felt that the Directors and officers should be covered, but that they should be aware that the Corporation was paying a higher premium for less coverage than it had previously. Mr. Reichl asked the Chairman to be sure to inform the Directors when the new insurance was procured and what the coverage would include. Mr. Noble assured the Directors that he would try to obtain coverage that would be in line with the Corporation's present insurance policy. Mr. Noble stated that, if the Board authorized him to do so, he would exert his best efforts to negotiate a satisfactory arrangement.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the procurement by the Chairman of directors and officers liability and corporation reimbursement insurance coverage from the RLI Insurance Company for the period September 17, 1985 to September 17, 1986, and from Lloyd's, London for the period November 1, 1985 to September 17, 1986, be, and it hereby is, ratified and confirmed; and it is further
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> RESOLVED, that the Chairman be, and he hereby is, authorized and directed to take all necessary or appropriate actions to procure directors and officers liability and corporation reimbursement insurance coverage beyond September 17, 1986, for a period not to exceed three years, for limits of liability and other terms as similar to the present coverages as in the judgment of the Chairman are reasonably practicable to obtain.

Omnibus Delegation of Authority

Mr. Rawicz said the Directors would consider a resolution to delegate all delegable powers of the Board and the Corporation to the Chairman, in order to ease the transition from the Chairman to the Secretary of Treasury. Mr. Corcoran asked if this meant that after the Corporation is abolished and the Board is terminated, the Secretary of Treasury would have the full powers of the Board. Mr. Rawicz replied that, if the Omnibus Delegation Resolution were passed, the Secretary of Treasury would assume all powers of the Chairman. There are a few powers of the Board, however, that cannot be delegated, such as hiring and firing officers or awarding financial assistance. Mr. Noble noted that passage of the Omnibus Delegation would not preclude another Board of Directors meeting before the Board is terminated.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Schroeder it was unanimously

> RESOLVED, that all of the functions, powers and duties of the Board and the Corporation which may be delegated by the Board under the Energy Security Act be, and they hereby are, delegated to the Chairman.

Discharge of the Corporation's Officers

Mr. Noble stated that the Continuing Resolution which abolished the Corporation necessitated the termination of all officer positions, a non-delegable Board function. He felt it was adviseable to retain each former officer as an employee during the phase-out period in the capacity of acting officers. Mr. Schroeder commended all the officers for their exemplary work and stressed that this was an administrative action which in no way reflected the Board's opinion of the officers' performance.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Schroeder, on a vote of 4-0 (Mr. Corcoran abstaining), it was resolved that

> WHEREAS, the Congress by Public Law 99-190 has provided that the Corporation shall terminate on or before April 18, 1986 and that the Board of Directors shall terminate their duties under the Energy Security Act and be discharged no later than February 17, 1986; and
>
> WHEREAS, the Energy Security Act provides for the appointment of, and removal of, officers of the Corporation as a nondelegable function of the Board of Directors; and
>
> WHEREAS, the By-laws of the Corporation require the annual election of Corporation officers other than officers appointed by the President with the advice and consent of the Senate and provide that an incumbent officer shall retain his office until the subsequent election of officers by the Board, or his resignation or removal by the Board; and
>
> WHEREAS, said By-laws provide for the removal of any such officer with or without cause; and
>
> WHEREAS, all the officers elected by the Board at its February 19, 1985 meeting still hold office; and
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> WHEREAS, the Board desires to provide the Chairman and his successor, the Secretary of Treasury, with flexibility in dealing with officer positions during the period remaining prior to the Corporation's termination; it is
>
> RESOLVED, that the following individuals be, and they hereby are, removed from office, without cause, effective January 24, 1986:

Name	Position
Thomas J. Corcoran	Vice Chairman
Leonard C. Rawicz	Vice President, General Counsel & Secretary
James F. Groelinger	Vice President-Finance & Treasurer
Charles A. Cowan, Jr.	Sr. Vice President-Projects
Ralph L. Bayrer	Vice President-Projects
Leonard C. Axelrod	Vice President-Technology & Engineering
Robert L. Fairman	Vice President-Administration
Donald A. Webster	Vice President-External Relations

and further it is,

RESOLVED, that the Chairman be, and hereby is, authorized to provide payment to each such former officer in lieu of notice pursuant to subsection IV.C. of the Corproation's Termination of Employment Policy, No. 140, dated March 1, 1985, or to retain each such former officer as a Corporation employee and at his discretion to assign to each such employee the duties of his former office in an acting capacity and in his discretion to provide each such former officer with notice that he will be terminated as an employee at a later date with termination benefits pursuant to subsection IV.A.2.b of said Policy.

Annual Report/Business Plan Report

Mr. Ralph Bayrer, Vice President - Projects, reported that the staff was preparing two documents for submission to Congress: the 1985 Annual Report of the Corporation and the Report to Congress required by the Continuing Resolution. The Continuing Resolution specified that the Report should fulfill the requirements of Section 126(b)(3) of the ESA, as well as the Phase I Business Plan. Mr. Bayrer stated that the Reports Task Force recommended that the Board notify the Congress that the Comprehensive Strategy Report (CSR) had already addressed Section 126(b)(3); therefore, the new Report would update the CSR and review the Phase I Business Plan. Mr. Reichl stated that he saw no way to complete such a Report by the time the Board terminated. He also did not wish to publish a Corporation report that could not be approved by the Board. Mr. MacAvoy agreed, saying publication of such a Report was impossible given the staff scale down and the termination of the Board on February 17, 1986. Mr. Rawicz stated that there was confusion in the legislative record over the exact due date of the required Report to Congress. He said the Board could undertake the task of writing a Phase I Report, or leave it for the Secretary of Treasury to complete. It was Mr. Rawicz's view that the required Report would be a report of the Corporation, not the Board. Mr. Noble said he preferred that the Board attempt to respond, rather than leave the task to Treasury. Mr. Schroeder endorsed Mr. MacAvoy's assertion that there was not enough time to do a credible job. Mr. MacAvoy stated that there was certainly not enough time or resources to make both quantitative and qualitative analysis which would reflect the quality characteristic of previous Corporation publications. He suggested that the Reports Task Force continue their qualitative analysis for the record, but that it could not meet the high analytical standards the Board had set for Corporation publications.

Mr. Noble stated that there was a sense of the Board that the Reports Task Force would complete its work to establish a record for the files, but the task of publishing a Report for Congress would not be undertaken by the Board.

Audit Committee Report

Mr. Reichl, the Chairman of the Audit Committee, reported that the Audit Committee had met that morning with the Corporation's outside auditors, Peat, Marwick, Mitchell & Co., who reported on its audit of the accounts of the Corporation for the year ending September 30, 1985. The outside auditors gave the Corporation complete "clean opinions" on its financial position, on the system of internal accounting control, and on compliance with the requirements of the ESA. Mr. Reichl said the Audit Committee accepted and approved the proposal by Peat, Marwick, Mitchell & Co. to conduct an examination of the financial statements of the Corporation as of April 18, 1986 and for the period October 1, 1985 through April 18, 1986. General S. Kenric Lessey, Jr., the Inspector General, noted that the Audit Committee had also approved Peat, Marwick's conducting an examination of the Corporation's Retirement Plan and the Corporation's Savings Plan as of the plans' termination date and for the period then ended; the Committee had earlier approved Peat, Marwick's proposal for the ERISA audit for the year 1985. Mr. Reichl stated that the Audit Committee had reviewed and approved the termination audit plan and budget of the Office of the Inspector General. Mr. Reichl also indicated that the Audit Committee had no objection to the Fourth Annual Report of the Inspector General, dated 30 November 1985, and had authorized its release to the public in accordance with the ESA.

Mr. MacAvoy complimented Mr. Reichl on the latter's exemplary leadership as Chairman of the Audit Committee, which enabled the Audit Committee and the Inspector General's staff to bring the quality of the internal audit effort to the point that the outside auditors described it as in keeping with the best audit processes of major American corporations.

Closing Statement

Mr. Noble commended the officers and employees of the Corporation and thanked the outside Directors for their time and personal interest in the affairs of the Corporation. He said the four projects funded by the Corporation will contribute greatly to the nation's energy future.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Reichl, the meeting was adjourned at 2:35 p.m.

Was there a quorum present at the time of the vote?

Mr. **Tashman**. Yes sir.

Mr. **Yates**. Any indication as to when Union clients were to begin construction of the facility modification?

Mr. **Bayrer**. I will take that question, if I might.

Union is proceeding on a course of action this year with two parallel paths. The first course of action is with regard to a technological change or fix to the existing facility to see whether or not it can be made to work, or at least work at reduced levels in the coming years. They will test that fix in the April time frame.

In parallel to that, they are conducting the engineering work for the carrying out of the fluidized bed combustion, or the technology that was approved by the contract under discussion right now. They will have completed that engineering work and come up with a definitive estimate by December of this year. At that point, the project will actually go into construction and will begin spending money under the loan guarantee under discussion. But, no monies will be expended before the beginning of next year.

Mr. **Yates**. It could still be operated without approval?

Mr. **Bayrer**. It is conceivable.

Mr. **Yates**. You said Schiff, Hardin was retained. Who in your shop retained them? The General Counsel did it?

Mr. **Tashman**. The General Counsel did it.

Mr. **Yates**. Verbally or by a letter, in writing, if you know?

Mr. **Tashman**. I don't recall there being a written retention, but I can inquire.

Mr. **Yates**. The purpose of my question was to find out whether—and I appreciate your response to this—whether there was any kind of a direction to Schiff, Hardin to try to find a position either for or against the final action by the Board?

Mr. **Tashman**. My understanding is that first, the charter for Schiff, Hardin is limited. It went to the analysis of the amendment agreement entered into in October. The issue posed for Schiff, Hardin was not to interpret the Energy Security Act or the rescission action that occurred in December, but to analyze the amendment agreement with particular reference to the portions relating to the loan agreement, and opine as to whether under general principals of contract law, it was a binding obligation or commitment which the Board was obliged to carry out.

My best understanding is that that charter was given to Schiff, Hardin in terms of—tell us what the law is, give us your best judgment as to whether there is a binding commitment here—without any suggestion that they should come out one way or the other.

Mr. **Yates**. As I sit here, I don't know what that means entirely, if the direction was to obtain an opinion based on general principles of contract law. Would that cover this specific instance? General principles of contract law may not cover an instance like this. Is that conceivable?

Mr. **Tashman**. There were a whole series of questions that had to be answered before one could conclude the Board had the authority to proceed. One such question was whether the Corporation back in October, in entering into the amendment agreement, performed all the procedural requirements under the Energy Security Act necessary for the amendment agreement to be a valid obligation of the

Corporation. That was one question, assuming that the procedural requisites had been met.

The second question was, does the contract itself, or the amendment agreement itself, give rise to a binding obligation, and while I said Schiff, Hardin looked into the question of general contract law, they looked into the question of whether under the law that applies to such undertakings by the Corporation, that undertaking was a binding contract. The issue there was whether——

Mr. **Yates**. In other words, specifics?

Mr. **Tashman**. An agreement to agree or whether it was an enforceable contract.

Mr. **Yates**. I have the impression that Schiff, Hardin, if it were a verbal direction to them in the first instance, would ask for a written direction as to what kinds of opinion you wanted, and I would assume somewhere in your files there is a direction for Schiff, Hardin, for an opinion covering certain points.

[The information follows:]

There was no written direction to the Schiff Hardin firm on how to proceed with their opinion. The nature of their undertaking is set forth in their opionion provided to the Corporation dated January 17, 1986, and included later in the transcript.

Mr. **Tashman**. I am not sure there is that kind of writing. The opinion itself states quite explicitly what it was Schiff, Hardin was asked to do and not to do. The first two paragraphs in the Schiff, Hardin opinion state in detail what they are opining on and what issues they have left for the General Counsel's office to opine upon, and if there is not a writing by the General Counsel's office initiating the exercise, the statement by Schiff, Hardin that appears in the opinion, I am confident, accurately reflects what they were called upon to do.

Mr. **Yates**. Did you have doubt of the validity of the action sought to be taken by the Board of Directors—you, as the General Counsel's office? If it was clear and open that a liability existed, in the opinion of the General Counsel—why did you have to call on Schiff, Hardin unless you had some doubts?

Mr. **Tashman**. First, the issue was open until it was resolved. That was my understanding.

Mr. **Yates**. Had you come to any conclusion before Schiff, Hardin was asked for an opinion?

Mr. **Tashman**. I personally didn't.

Mr. **Yates**. I mean the law office of the Corporation. Had your opinion been sought by the Board, and had you answered it one way or another to the Board before you asked for Schiff, Hardin's opinion?

Mr. **Tashman**. My best understanding is no, that once the Congress acted, the issue was raised, can the Corporation proceed, does the amendment agreement fall within the exception of the rescission legislation?

The Legal Services Group proceeded to analyze both the most recent legislation, and the amendment agreement which gave rise to the obligation.

Mr. **Yates**. Let's go back and try to analyze what happened. Congress passed the Interior Appropriation with the prohibitions in it and the Board must have called the General Counsel and said, what do we do now?

Mr. TASHMAN. Yes, sir.

Mr. YATES. The General Counsel looked at the Act and said what? You can't proceed, or you can proceed?

Mr. TASHMAN. I would be speculating to some extent.

Mr. YATES. That is probably what any reasonable person who was on the Board would want to know. Congress says stop. Do we stop or do we go forward with Union? I would ask my lawyer first and your boss was the lawyer.

Mr. TASHMAN. Leonard Rawicz.

Mr. YATES. Is he still your boss?

Mr. TASHMAN. Yes.

Mr. YATES. Why didn't he come in with you?

Mr. TASHMAN. I don't think we anticipated this detailed examination.

Mr. CONTE. You have got to be kidding. Did you hear me on the floor of the House that day when I said you all should go to jail if you let these contracts out? You didn't hear me? I shouted.

Mr. TASHMAN. I read the Congressional Record.

Mr. CONTE. You did not anticipate I would be here today?

Mr. TASHMAN. I did not, sir. Both I and Mr. Rawicz initialed this opinion.

Mr. YATES. A Director was Mr. Noble—and knowing Mr. Noble from previous experiences, I would say the action of the Congress must have disturbed him. I would think he would find some way of completing the contract.

Mr. TASHMAN. It is fair to say there was considerable concern in light of the rescission language as to whether the Corporation could take further action, and whether approval of the loan guarantee documents could go forward. There may have been an immediate request for an informal reaction, but I am sure that Mr. Rawicz would have said, regardless of what his informal response would have been, that this was a very serious issue, and that the Board should have the benefit of a formal opinion, and——

Mr. YATES. Did you handle it or did Mr. Rawicz handle it? Who handled this question of working with the Board on the question of whether or not the contract could be approved further?

Mr. TASHMAN. Mr. Rawicz had ultimate responsibility, but I played a very active role in analysis and drafting.

Mr. YATES. Are you saying you handled it rather than Mr. Rawicz?

Mr. TASHMAN. No, it was handled by both of us.

Mr. YATES. When did you decide to go to Schiff, Hardin?

Mr. TASHMAN. Fairly early on, and once we had analyzed the various issues that had to be resolved, and——

Mr. YATES. Well, were you in doubt as to your legal position when you went to Schiff, Hardin?

Mr. TASHMAN. I think it fair to say that until we had the benefit of Schiff, Hardin's analysis and reviewed it, it was an open issue.

Mr. YATES. Was it open in your mind?

Mr. TASHMAN. Yes.

Mr. YATES. In other words, there was some doubt there?

Mr. TASHMAN. There was a question that needed to be answered.

Mr. YATES. Is that the same way as saying there was doubt?

Mr. TASHMAN. Well, to say there is doubt suggests that the answer had been reached, and someone questioned it, but I would say——

Mr. YATES. On the contrary. I don't think that follows necessarily. I think you can conclude that you haven't got it certain in your mind as to what the answer was.

Mr. TASHMAN. We had not yet reached an answer.

Mr. YATES. It was not an open and shut case yet?

Mr. TASHMAN. It required analysis.

Mr. YATES. Did anybody analyze before you went to Schiff, Hardin? Did you or Mr. Rawicz analyze it?

Mr. TASHMAN. We both looked at the issues.

Mr. YATES. Did you then reach any conclusion? Speak for yourself.

Mr. TASHMAN. Once I had read the language of the statute, and its legislative history, and reviewed the circumstances surrounding the execution of the amendment agreement back in October, I was fairly confident that if the amendment agreement by its terms gave rise to an enforcible contract with regard to the loan guarantee, that further Board action was consistent with the rescission.

Mr. YATES. Had to be taken or was consistent with it?

Suppose the Board had done nothing?

Mr. TASHMAN. The Board action was within the exception created by the rescission.

Mr. YATES. Did the Board want to take action? Did the Board come to you and say we want to finish this contract, can we do it in view of the language of the contract?

Mr. TASHMAN. I would have to defer to Mr. Rawicz on that point.

Mr. YATES. Maybe we ought to have Mr. Rawicz come in then.

Mr. TASHMAN. I would doubt that he had direction from the Board as a body. He would most likely have had conversations with the Chairman.

Mr. YATES. I am sure of that. I am sure Mr. Noble would have called Mr. Rawicz and said, how do we do this? Mr. Noble was of a mind to approve this, if it required further approval. We better call Mr. Rawicz.

Mr. CONTE. I would be interested why they settled on a second opinion from Schiff, Hardin in Chicago. Why not get a firm right here in Washington?

Mr. YATES. Or Boston. He had said that Schiff, Hardin had been working on other aspects of the case.

Mr. TASHMAN. They had been outside counsel to the Corporation in connection with the negotiations of the amendment agreement.

Mr. CONTE. Why were they working on it prior to this case?

Mr. TASHMAN. It has been our practice to engage outside firms to help us on, I think, virtually all of the——

Mr. CONTE. Were they on a retainer basis, or did they charge you for this opinion separately? What was the fee for their services?

Mr. TASHMAN. I don't have the figure, but I believe that they submitted a bill that was directed to the work they performed on this opinion.

Mr. CONTE. I would be interested for the record to know what that fee was.

[The information follows:]

Schiff, Hardin did not charge the Corporation separately for its work on the opinion. They submitted a bill for $13,833.40 on 1/31/86. They have informed us that approximately $7,000 of that bill to us is for their work on the opinion.

Mr. MILLER. Mr. Conte, we had a series of contracts with Schiff, Hardin and Waite, dating back to March of '84, relating to four different projects in which the Corporation was involved: Seep Ridge, Cathedral Bluffs, Forest Hill and Union. So it was not a new relationship with the firm.

Mr. CONTE. I am intrigued as to why he went to Chicago. That is a long way off from Washington.

Mr. MILLER. We sought outside counsel and the first of these contracts was with the Cathedral Bluffs project, which was closer to Chicago, and that began a relationship, as I said, dealing with three other projects after Cathedral Bluffs—Seep Ridge, Forest Hill and Union. The Union contract was opened in August of '85.

Mr. CONTE. If you retained the firm because of the close proximity to the project, why didn't you go to a law firm in Colorado?

Mr. YATES. Maybe we ought to find out whether there were other lawyers in the case. Were there other lawyers consulted in the case?

Mr. TASHMAN. Schiff, Hardin engaged a Colorado firm.

Mr. YATES. Silvio, you have got your Colorado firm.

Mr. TASHMAN. I believe they consulted counsel on local law.

Schiff, Hardin had been engaged in assisting us on the Union contract.

Mr. YATES. More than Union contract, apparently on all four. Is it correct to say that Schiff, Hardin was your outside counsel?

Mr. MILLER. One of them.

Mr. TASHMAN. With regard to those projects, yes, but we had other outside counsel for other projects.

Mr. YATES. What other lawyers did you have for what other projects?

Mr. TASHMAN. I am not able to list them all, but O'Nelveney and Myers comes to mind. They had Washington offices, but their principal office was in California. They have a substantial Washington office as well, but the lawyers who worked with us were operating out of their Washington office.

Mr. YATES. Do they represent Union Oil by any chance?

Mr. TASHMAN. No, sir.

Mr. YATES. I thought they might have.

Mr. TASHMAN. Not that I am aware of, but they did not represent the Corporation with regard to the Union matter. I am merely saying Schiff, Hardin is not the only outside firm the Corporation has engaged to provide assistance on project contracts.

Mr. CONTE. Mr. Chairman, was there any discussion in the January board meeting about Congress passing that two-day moratorium to prevent the Synthetic Fuels Corporation from going ahead with the Union project?

Mr. TASHMAN. I don't recall any such discussion.

Mr. CONTE. They just ignored the intent of Congress? You said you read the Congressional Record. You remember that debate, and why we enacted that moratorium for two days.

Mr. **Tashman**. I remember that.

Mr. **Conte**. There was discussion in the newspapers, the Board was going to meet and rush to approve certain contracts. I put that amendment in at that time and said you better not do it. Did you read that in the Congressional Record?

Mr. **Tashman**. I guess I must have.

Mr. **Conte**. In discussing congressional intent, you answered the chairman that the rescission language was vague, didn't the Corporation staff consider the intent of the moratorium?

Mr. **Tashman**. I don't believe that the moratorium applied on January 21 when the Board acted.

The issue was the text of the rescission, and the Congressional intent behind the text of the rescission. We concluded that the Union amended agreement was a binding contract, and, therefore, fit the exception to the rescission.

Mr. **Conte**. If you read the Congressional Record, you would have read in there that we passed that two-day moratorium because we learned that the Board was going to meet and approve that contract, and we didn't want that contract to go through.

We said it was illegal, and they actually made that contract. If they made that, they should all go to jail. We made that very plain.

Mr. **Tashman**. Without that rescission language, there would have been no restriction on the ability of the Board to act. The issue, as we saw it, was once the rescission was passed, there were restrictions on the ability of the Board to act. Was the Union loan guarantee covered by the restriction or by the exception?

We concluded that it was covered by the exception.

Mr. **Conte**. I disagree with you. Did you or the Board or your boss receive any calls from the White House on Union Oil?

Mr. **Tashman**. I understand that there may have been discussions with the White House at the time of the moratorium, the two-day moratorium. There was some question as to what the effect of the moratorium would be when it ended, what action could be taken.

I am not aware of any discussions leading up to the December 19 Board meeting.

Mr. **Conte**. How about the attorney general, did he ever call?

Mr. **Tashman**. I meant the January 21 board meeting, I 'm sorry. I just don't know the answer to your question about the attorney general.

Mr. **Conte**. Thank you, Mr. Chairman.

Mr. **Yates**. Would you consider that you had a good case if you were to sue for a rescission of this contract, based on the congressional language?

Is there enough doubt there to have identified a case?

Mr. **Tashman**. If we conclude there was a binding obligation which the rescission itself expressly provided, I don't believe a case for a contract rescission could be made.

Mr. **Yates**. Do you think there is enough of a doubt to want testing, considering the possible obligation by the Government and the amount of money involved?

Mr. **Tashman**. I believe others already have the opportunity to review the matter. We reached our conclusion in the manner we did on January 21.

Mr. **Yates**. Mr. Regula?

Mr. **Regula**. No questions.

Mr. **Yates**. We ought to hold the hearing open to see maybe whether we want general counsel.

Mr. **Tashman**. I can present the opinion at this time which includes the opinion of Schiff, Hardin and Waite.

Mr. **Yates**. That may be accepted for the record.

[The information follows:]

SCHIFF HARDIN & WAITE
A Partnership Including Professional Corporations
7200 Sears Tower, Chicago, Illinois 60606 · Telephone (312) 876-1000 · Twx 910-221-2463

Milton H. Cohen
Newton P. Frye, Jr., P.C.
Keith Shay, P.C.
W. Donald McSweeney, P.C.
Burton R. Rissman, P.C.
James B. Wilson, P.C.
Mitchell S. Rieger
Guenther M. Philipp, P.C.
James M. Van Vliet, Jr.
Paul B. O'Flaherty, P.C.
David F. Allen, P.C.
Lawrence Block, P.C.
William A. Montgomery, P.C.
Stuart L. Goodman
Peter V. Fazio, Jr.
Michael L. Meyer
Gary L. Mowder, P.C.
Roger Pascal
Paul K. Rhoads
Sheldon A. Zabel
John J. Voortman, P.C.
Aaron J. Kramer
Thomas P. Luning
Alfred Elliott
Frederick L. Hartmann, Jr.
Allan Horwich
William H. Navin
Roy M. Adams
Richard J. Hoskins

Joseph R. Lundy
Ronald Wilder
Barry S. Alberts
Wayne A. McCoy
Peter L. Rossiter
Neal A. Mancoff
Allen J. Sweet
Samuel C. Thompson, Jr.
James T. Friedman
Joseph P. Collins
Owen E. MacBride
William H. Pokorny, Jr.
Peter V. Baugher
Carl A. Royal, P.C.
Walter C. Greenough
Ann Rae Heitland
William M. Hannay
David R. Hodgman
Mark C. Zaander
John F. Adams
James A. Clark
Suzanne R. Sawada
Lisa A. Weiland
J. Mark Fisher
David A. Harpe
Scott E. Pickens
Thomas B. Quinn
Robert H. Riley

Norman Waite
John J. Waldron

Dean C. Cameron

Of Counsel

WASHINGTON OFFICE:
1101 Connecticut Avenue, N.W.
Washington, D.C. 20036
Telephone (202) 857-0600
Telex SHW 64590

Drexel D. Journey
Andrew M. Klein
David J. Taylor
Gearoid L. Knowles
Edwin S. Rockefeller

Paul S. Haar
Patricia D. Ryan

Thomas W. Abendroth
Amy L. Beckett
Scott Bieber
Eric A. Blanchard
Michael L. Brody
James E. Brown
Sally F. Cloyd
Jean K. Connolly
Howard A. Davis
Paul E. Dengel
Leslie Donavan
Patricia Dondanville
Stephen J. Dragich
Marci A. Eisenstein
Catherine M. Epstein
Edward J. Finn
Charles D. Fox, IV
Deborah A. Golden
Duncan G. Harris
Thomas B. Haynes
Barbara E. Hermansen
Catherine A. Jacobson
Janet M. Johnson
Sara L. Johnson
Nancy H. Kaufman
Frederic R. Klein
Andrew A. Kling

Judith A. Levin
Susan R. Lichtenstein
Lorenzo S. Littles
Doreen Marcus
David [illegible] Mason
John H. McCulloh
James R. McDaniel
Merili McFawn
Robert J. Minkus
Terence J. Moran
Geoffrey R. Morgan
Joseph J. O'Hara, Jr.
Robert R. Pluth
Robert J. Regan
Marie T. Reilly
Ronald S. Safer
Emily Sharpe
Lori E. Simon
Edward A. Snyder
Frederick J. Sperling
Beth A. Stone
David M. Weiner
Meera Werth
Robert B. Wilcox, Jr.
Paul R. Wysocki
Todd M. Young
Richard A. Zanetis

January 17, 1986

United States Synthetic Fuels Corporation
2121 K Street, N.W.
Washington, D.C. 20586

Gentlemen:

Article 6 of the Amendment Agreement (the "Amendment Agreement"), dated as of October 16, 1986, between Union Oil Company of California ("Union") and the United States Synthetic Fuels Corporation (the "Corporation"), states that, subject to the fulfillment of various conditions, the Corporation commits to execute the Guaranteed Loan Agreement (as therein defined). You have requested our opinion as to whether this commitment constitutes the legal, valid and binding obligation of the Corporation.

For this purpose we have reviewed the Amendment Agreement and made such examination of law as we believed necessary to render the opinion hereinafter given. For the purposes of our opinion we have assumed that the Amendment Agreement has been duly authorized, executed and delivered by the proper officers of Union and the Corporation. Our opinion as to the legal, valid and binding nature of the Corporation's commitment is limited to an opinion as to matters of general contract law and does not address the legality of the Corporation's commitment, or of fulfillment by the Corporation thereof, under the Energy Security Act, 42 U.S.C. §§8701 et seq. (the "Act"), as amended. In particular, we have not considered whether all findings and determinations required by the Act to be made by the Corporation prior to entering into the Amendment Agreement and to awarding the financial assistance purported to be awarded thereunder have been made by the Corporation or whether the Amendment Agreement complies with the applicable limitations and conditions set forth in the Act.

Based upon the foregoing review, examination and assumptions, and for the reasons set forth below, we are of the opinion that the commitment made by the Corporation in Article 6 of the Amendment Agreement constitutes the legal, valid and binding obligation of the Corporation. Our reasoning in support of this conclusion is as follows.

Applicable Law.

In considering what law applies to determining the rights and obligations of the parties to the Amendment Agreement, we viewed the Amendment Agreement as a contract of the United States, since, pursuant to Section 131(c) of the Act, contracts of the Corporation for financial assistance are general obligations of the United States backed by its full faith and credit. Article 11.18 of the Amendment Agreement provides that ". . . the rights and obligations of the parties hereunder shall be governed by and construed and interpreted in accordance with the federal laws of the United States where applicable and otherwise in accordance with the laws of the District of Columbia." Such a choice of law provision in a contract to which the United States is a party will be given effect by the courts. NRM Corp. v. Hercules, Inc., 758 F.2d 676, 681 (D.C. Cir. 1985); Overseas Trading Company, S.A. v. United States, 159 F.Supp. 382, 384 (Ct. Cl. 1958). Accordingly, the Amendment Agreement will be governed by federal law "where applicable". It is a general rule that contracts of the United States entered into pursuant to authority confered by federal statute are governed by federal law. United States v. Seckinger, 397 U.S. 203, 209-210 (1970). Therefore, federal law is applicable to the Amendment Agreement and is the law governing the rights and obligations of the parties thereunder.

With respect to questions of general contract law, federal law provides that, unless Congress adopts a different standard, the principles of the common law of contracts are applicable. Priebe & Sons, Inc. v. United States, 332 U.S. 407, 411 (1947); Bituminous Casualty Corporation v. Lynn, 503 F.2d 636, 640 (6th Cir. 1974). The Act does not contain any provision which alters the governing law and, while we have not specifically researched the question, we are not aware of any other federal statute which would alter the governing law applicable to the contracts of the Corporation. Consequently, we conclude that the law which is relevant in determining whether the commitment made by the Corporation in Article 6 of the Amendment Agreement constitutes the legal, valid and binding obligation of the Corporation is the common law of contracts.*

Binding Nature of the Commitment under Common Law.

The analysis of whether the commitment of the Corporation in Article 6 of the Amendment Agreement constitutes the legal, valid and binding obligation of the Corporation involves consideration of two closely related principles of general contract law. The first is whether the parties have manifested a clear intention to be legally bound, and the second is whether the objective manifestation of the parties' intention is sufficiently definite. These two principles, and their application to the provisions of Article 6, are separately discussed.

Intention to be Bound.

In construing a document to determine whether or not it is a contract, the primary function of the court is to discern and give effect to the mutual intentions of the parties. NRM Corp. v. Hercules, Inc., 758 F.2d 676, 681 (D.C. Cir. 1985). "Intention" has been defined by reference to the requirement stated in the Restatement (Second) of Contracts §17 (1981) that there be a "manifestation of mutual assent to the exchange." NRM Corp. v. Hercules, Inc., 758 F.2d 676, 681, n. 14 (D.C. Cir. 1985). This definition conforms to the standard generally applied in construing government contracts. J. & B. McBride & Touhy, Government Contracts §2.10[3] (1981).

The intention of the parties is determined from their external expression of intention rather than from undisclosed intention. Restatement (Second) of Contracts §2 (1981). "If the parties' expressions and conduct would lead a reasonable person to determine that they intended to reach a binding agreement, their agreement will be enforced." Gennaro v. Rosenfield, 600 F.Supp. 485, 490 (S.D.N.Y. 1984).

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*Even if a court should somehow conclude that the law of the District of Columbia and not federal law applies to the Amendment Agreement, our conclusion as to the binding nature of the commitment by the Corporation in Article 6 of the Amendment Agreement would be the same. Courts applying the law of the District of Columbia have followed the common law of contracts as set forth in Restatement of Contracts (1932) with respect to questions involving the enforceability of contracts. (See, e.g., Basch v. George Washington University, 370 A.2d 1364, 1367, 1369 (D.C.App. 1977)).

There would seem to be no doubt that both Union and the Corporation clearly manifested an intention that the Amendment Agreement, including the conditional commitment made by the Corporation in Article 6, be a binding obligation. The form and substance of the Amendment Agreement provide the most important indication of this intention.

The form of the Amendment Agreement is substantially similar to forms of agreements customarily used in financial transactions. Also, after its recitals and acknowledgment of mutual consideration, it states that the parties "covenant and agree" - language traditionally used in contracts to evidence the intention of the parties to create binding obligations.

Similarly the substance of the Amendment Agreement is that of mutual agreements and commitments by the parties, and the language used to express these agreements and commitments is that of the creation of presently binding obligations. In particular, Article 6 of the Amendment Agreement states that, subject to the fulfillment of various conditions precedent, the Corporation "hereby commits to execute" the Guaranteed Loan Agreement. This present tense expression of a commitment reflects the clear intention of the Corporation to be bound.

In addition, other expressions and actions of the parties further evidence their intention to create binding obligations:

1. The Amendment Agreement is a written agreement consisting of 79 pages of printed text that was executed by officers of Union and the Corporation and was the result of over two months of negotiations between the parties and their counsel.

2. The Amendment Agreement recites that it ". . . provides for the commitment of the Corporation to . . . guarantee loans pursuant to Section 133 of the Act." (Amendment Agreement, page 1).

3. Article 2.2(b) and Article 3.9(b) of the Amendment Agreement contain representations of Union and the Corporation, respectively, that the "Amended Contract" (defined to include the Amendment Agreement) constitutes the legal,

valid and binding obligation of the party making the representation. The Corporation also represents that the Amendment Agreement is a legal, valid and binding contract for financial assistance of the Corporation under Sections 133 and 134 of the Act, entitled to the benefits of Sections 131(c) and (d) of the Act, that it is a written contract upon which liability of the Corporation may be based, and that it is enforceable against the Corporation in accordance with its terms. In this respect it should be noted that Section 133 of the Act deals exclusively with loan guarantees made by the Corporation, which is the subject matter of the commitment of the Corporation in Article 6 of the Amendment Agreement.

4. Subsequent to the execution of the Amendment Agreement, both Union and the Corporation commenced the preparation of the Guaranteed Loan Agreement, the Collateral Agreements, the legal opinions and the officers' certificates specified in Article 6 as documents necessary to fulfill the conditions precedent to the performance by the Corporation of its obligations unde that Article. The conduct of the parties thus evidences the intention of the parties that the commitment by the Corporation in Article 6 was a binding obligation.

The above and other factors lead us to conclude that there has been a clear manifestation of intention by the parties that the commitment by the Corporation in Article 6 of the Amendment Agreement was a binding obligation.

Definiteness.

In addition to determining that there has been an intention to be legally bound, in order for a document to constitute a legally binding agreement the objective manifestation of the parties' intention must be sufficiently definite. Penn-Ohio Steel Corp. v. United States, 354 F.2d 254, 266 (Ct. Cl. 1965). The commitment made by the Corporation in Article 6 of the Amendment Agreement - to execute the Guaranteed Loan Agreement - is clear and definite. This commitment is, however, subject to the satisfaction of certain conditions precedent. The mere fact that this commitment is subject to the satisfaction of conditions precedent does not, by itself, affect the binding nature of the contractual commitment or render the commitment indefinite. A condition is an event, not certain to occur, which must occur, unless its non-occurrence is excused, before performance under a contract becomes due. Restatement (Second) of Contracts, §224 (1981). An intention to make a duty conditional may be manifested by the general nature of an agreement as well as by specific language. Restatement (Second) of Contracts §226 (1981). Here both the nature of Article 6 of the Amendment Agreement as well as its language manifests such an intention. Thus the question here is whether the conditions set forth in Article 6 of the Amendment Agreement are sufficiently definite.

Where the performance by a party under a contract is subject to the satisfaction of conditions precedent, it is nevertheless enforceable if the conditions are stated with sufficient clarity so that the major conditions are reasonably capable of ascertainment and some standard exists for determining whether the conditions have been fulfilled. Reference may be made to commercial practice or other usage or custom to provide this standard. "The fact that the parties have left some matters to be determined in the future should not prevent enforcement if some method of determination independent of a party's mere 'wish, will and desire' exists, either by virtue of the agreement itself or by commercial practice or other usage or custom." 1 Corbin, Contracts, §95 (1963).

As written by Judge Learned Hand, for example, "[t]here is no objection to a promise that it is indefinite so long as the parties can tell when it has been performed, and it is enough if, when the time arises, there shall be in existence some standard by which it can be tested." Moon Motor Car Co. of New York v. Moon Motor Car Co., 29 F.2d 3, 4 (2nd Cir. 1928). This doctrine has been followed in cases where the United States is a party to the contract. "The law rejects post facto claims that agreements are too indefinite for enforcement, where the parties knew what each of them was to do under the contract and some standard exists to measure performance." Saul Bass & Assoc. v. United States, 505 F.2d 1386, 1394 (Ct. Cl. 1974).

The fact that the conditions set forth in Article 6 are to be fulfilled to the reasonable satisfaction of the Corporation does not detract from the enforceability of the Corporation's commitment. The rule of general contract law with respect to conditions to the duty of an obligor based upon the obligor's satisfaction with respect to the obligee's performance or with respect to something else is that the exercise of the obligor's judgment must be in accordance with the duty of good faith and fair dealing, and for this reason an agreement that is conditioned upon the satisfaction of the obligor is not illusory. Restatement (Second) of Contracts §228, comment a (1981). If it is practicable to determine whether a reasonable person in the position of a obligor would be satisfied, ". . . an interpretation is preferred under which the condition occurs if such a reasonable person in the position of the obligor would be satisfied." Restatement (Second) of Contracts §228 (1981). See also Calamari and Perillo, Contracts §§11-18 (2nd ed. 1977).

The commitment made by the Corporation in Article 6 to execute the Guaranteed Loan Agreement containing its guarantee of indebtedness of Union is subject to the satisfaction of several specified conditions "to the reasonable satisfaction of the Corporation". These conditions include that (1) representations and warranties made by Union in various documents shall be true and Union shall have performed all obligations required to be performed by it; (2) the terms of the Guaranteed Loan Agreement, the Collateral Agreements and the Guaranteed Notes shall be reasonably satisfactory to the Corporation and shall be consistent with the terms for the indebtedness set forth on Schedule 6.2 to the Amendment Agreement; (3) such documents shall have been authorized and executed by parties other than the Corporation; (4) the Corporation shall have received such officers' certificates from Union as the Corporation may reasonably request; (5) the Corporation shall have received legal opinions from counsel to Union as the Corporation may reasonably request; (6) certain events defined in the Amendment Agreement (for example, Events of Default, Abandonment or Permitted Termination) shall not have occurred; (7) documents delivered to the Corporation relating to the execution of the above agreements and proceedings taken in connection therewith shall be satisfactory to the Corporation; and (8) the Corporation shall have received certain copies of documents as it may reasonably request relating to such documents, the satisfaction of the conditions set forth in Article 6 and the performance of agreements required to be performed.

For several reasons we believe that ample factors exist which adequately define what would be objectively satisfactory to a reasonable person in relation to the fulfillment of the conditions in Article 6.

All of these conditions, with the exception of condition number (2) in the above listing, are customarily contained in loan and other financing agreements as conditions to closing. Whether these "boilerplate" conditions have been satisfied can be readily determined by reference to established commercial practice. As indicated above, reference to commercial practice is appropriate for this purpose. 1 Corbin, Contracts §95 (1963).

With respect to condition number (2), that the terms of the Guaranteed Loan Agreement, the Collateral Agreements and the Guaranteed Notes be reasonably satisfactory to the Corporation, various provisions of the Amendment Agreement provide detail concerning the content of such documents. Article 6 specifies that the Guaranteed Loan Agreement is to incorporate the terms and conditions of a guarantee by the Corporation substantially in the form of Schedule 6.2A to the Amendment Agreement, which schedule sets forth specific contractual language for such terms and conditions. Article 6.2 also specifies that these documents are to be in form and substance consistent with the terms for indebtedness set forth on Schedule 6.2 to the Amendment Agreement, which Schedule outlines the major terms of the indebtedness, including the principal amount of the indebtedness, a parameter referring to objective criteria for the interest rate and fees on the indebtedness, repayment provisions for the indebtedness, and the collateral to be provided in the Collateral Agreements. In other respects the terms of these agreements can be ascertained by reference to past usage, including agreements executed or proposed by the Corporation in other transactions. In our view the foregoing forms the basis for an adequate standard to measure whether this condition of the Amendment Agreement has been satisfied.

In view of the legal principles discussed above, the clear manifestation of the intention of the parties to be legally bound, the definiteness with which the conditions set forth in Article 6 of the Amendment Agreement are expressed and the existence of reasonable standards for determining when the conditions have been satisfied, we believe that the commitment made by the Corporation in Article 6 of the Amendment Agreement is a binding obligation of the Corporation under the general contract law.

Very truly yours,

Schiff Hardin + Waite

Schiff Hardin & Waite

Mr. Yates. How much longer are you going to work for the Corporation? Do you have a time for termination?

Mr. Tashman. It is anticipated that I will be terminated on April 15.

Mr. Yates. Okay. What about the rest of you? You are staying on with Treasury, Mr. Sethness? It doesn't affect you?

Mr. Bayrer. My date is April 15.

Mr. Yates. Yours?

Mr. Miller. April 15.

Mr. Yates. What about Mr. Rawicz?

Mr. Miller. His is March 31.

Mr. Yates. If there are no further questions, we will hold this open temporarily.

How much money are you asking for?

Mr. Miller. Ten million dollars was set aside in the Continuing Resolution for the termination, Mr. Chairman.

Mr. Yates. Do you need all that money?

Mr. Miller. Yes, sir. There are a number of things yet to do. A great deal is for staff costs which involve——

Mr. Yates. Up until April 15 or further?

Mr. Miller. No, up until April 15.

We have a planned phase-down of staff by individual, depending on where they fit into the plan to terminate the Corporation.

Mr. Yates. You say contracts and consultants. What do you mean by consultants?

Mr. Miller. Contracts are contracts with firms, consultants are contracts with individuals. We had quite a few of those outstanding, Mr. Chairman.

Mr. Yates. Who are your consultants?

Mr. Miller. We have quite a list of them, which I would submit for the record, please.

Mr. Conte. Does that sheet show how much each consultant was being paid?

Mr. Miller. Yes, this is a report as of January 31, Mr. Conte, it is one that we update.

Mr. Conte. And what each consultant was doing?

Mr. Miller. Yes, and who in the Corporation is the monitor of the contract and the current status and purpose of the contract.

Mr. Yates. This may be received for the record. We would appreciate some extra copies of this.

Do you have any with you?

Mr. Miller. That is my only copy.

Mr. Yates. All right, furnish copies for the record, would you?

[The information follows:]

UNITED STATES SYNTHETIC FUELS CORPORATION

STATUS OF CONTRACTS AND CONSULTING AGREEMENTS

AS OF

JANUARY 31, 1986

CATEGORY PAGE

SECTION I - ACTIVE CONTRACTS:

A. ISSUED DURING JANUARY 1

B. BROUGHT FORWARD FROM DECEMBER 2

C. COMPLETED DURING JANUARY 7

SECTION II - ACTIVE CONSULTING AGREEMENTS

A. ISSUED DURING JANUARY 13

B. BROUGHT FORWARD FROM DECEMBER 14

C. COMPLETED DURING JANUARY 23

SECTION I. A.

SFC ACTIVE CONTRACTS - AS OF 1/31/86

CONTRACTS ISSUED DURING JANUARY

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-86-001-C The Redford Group	Provide outplacement services to Corporation employees	Finance	Fixed Price	1/9/86-4/15/86	$46,000	$16,000	-	Provided three day seminars for SFC staff. Will be on call as needed.

SECTION I. B.

SFC ACTIVE CONTRACTS - AS OF 1/31/86

CONTRACTS BROUGHT FORWARD FROM DECEMBER

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
ADP Network Services Inc.	Basic computer time-sharing Agreement with development and application options.	[illegible] (D. Weed)	Basic Services	11/17/83-month-to-month term	Monthly Usage Charges	$154,975.58 (This figure represents expenditures under this Agreement only)	N/A	Not a completion type contract. Services are provided to support existing automated systems. Only remaining application on system is Fixed/Consummables Inventory in support of Administrative Services.
Aetna Life and Casualty Co.	Provide employees with individual insurance, medical, dental, life, accidental death, travel accident	Admin (Sondra Gillice)	Insurance Monthly Premium	2/1/81 Open	N/A	$1,809,774.86	N/A	In process of terminating contract due to Corporatio's status.
SFC-85-002-C AMS	Data Processing production, terminal support and miscellaneous services to support the CFMS	Finance (Vernell Arrington)	Service Agrmt.	12/31/84-12/31/86	$45,000	$34,824.87	-	Timesharing costs for the operation of the accounting system. Provided revised rates for professional services.
SFC-84-022-C AMS (American Management Systems)	Computer timesharing for financial modeling	Finance	Usage Charges	8/15/84 8/15/86	Monthly Usage Charge Approx. $20,000/mo.	$453,978.95	N/A	Used to store SPAN Financial Model and related data and transfer SPAn functions to Lotus computer program.
SFC-82-015-C American Security Bank	Act as trustee and recordkeeper for [illegible] retirement/savings plan	Admin (Sandra Gillice)	Trustee Agreements (2) and Operating (1)	10/1/82-Open	Est. @ $25,000/yr	$57,088.72 (Record-keeping and investment charges)	N/A	Working with ASB to establish forfeiture funds and close out R/S Plans.

SFC ACTIVE CONTRACTS - AS OF 1/31/86

CONTRACTS BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #1	-	-	-	-	-	-	-	Administrative change; no change to cost or scope of the contract.
Amendment #2	Increase in record-keeping capabilities	-	-	-	Based upon % of fund	-	-	-
Choice	Medical Health Care Plan	Admin. (Sondra Gillice)	Insurance Monthly Premium	4/1/85-Open	-	$36,724.22	N/A	In process of terminating contract due to Corporation's status.
CNA	Provide employees with long-term disability insurance	Admin (Sondra Gillice)	Insurance Monthly Premium	1/1/81 Open	N/A	$119,363.46	N/A	Two outstanding LTD claims.
SFC-84-024-C Control Data Business Centers	Payroll Processing for Corporation	Finance (Vernell Arrington)	Service Agreement	9/24/84-9/24/86	$800/mo.	$8,761.67	-	Semi-monthly processing of the Corporation payroll.
Amendment #1	Provide payroll distribution reports	-	-	-	Approx. $30/month	-	-	-
Kaiser Permanente	Provide group medical coverage for SFC employees	Admin. (Personnel)	Service Agreement	Not a completion type contract	Depends upon No. of employees enrolled	$138,931.18	N/A	In the process of terminating contract due to Corporation's status.
NS&T Bank	Automatic deposits and payments system for SFC employee paychecks.	Finance (Vernell Arrington)	Operating Agreement	2/4/83-Open	N/A	N/A	N/A	Provides for semi-monthly direct deposit of employee paychecks.

SFC ACTIVE CONTRACTS - AS OF 1/31/86

CONTRACTS BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
The Pace Company	Quarterly data base subscription re: oil shale, tar sands and coal	Admin/IMS	Subscription	4/1/81-3/31/86	$10,000/yr (Increase by 5% each subsequent year)	$47,700	N/A	Terminated effective 2/17/86.
Peat Marwick Mitchell & Co. Inc.	Provide various accounting and audit services to SFC as directed	IG (Kenric (Lessey)	Basic Agreement with specific "Letters of Engagement"	12/12/80-Open	Per Assignment	$229,605.55 (Total of all work)	N/A	Active.
SFC-84-025-A Selecterm, Inc.	Month-to-month lease of Computer micro equipment	IMG (Dorothy Weed)	Month-to-lease	4/1/83-Open	$1,912 per month	$98,970.69	N/A	Phase out beginning in 30 day increments.
SFC-84-015-C G. M. Smith & Associates	Review all short and long-term disability cases and also make specific review of the Corp's sick leave policy and other Personnel policy & procedures	Admin (Sondra Gillice)	Services Agreement	2/21/84-5/18/84	$150/hr + exp.	$10,537.50	N/A	Contract to be terminated April 1, 1986.
Amendment #1	-	-	-	Extend term to 8/17/84	-	-	-	-
Amendment #2	-	-	-	Change end date to 5/18/85	-	-	-	-

SFC ACTIVE CONTRACTS - AS OF 1/31/86

CONTRACTS BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #3	-	-	-	Change end date to 5/17/86	Hourly fee raised to $165/hr.	-	-	-
SFC-84-011-C Sobotka & Co.	Analysis of the determinants of the private sector synthetic fuel investment decisions	Finance	Basic Agrmt.	2/22/84-Open	To be determined by Task	$79,493.08 (Total all Tasks)	-	Contract to be terminated.
Amendment #1	In addition to above: review and analysis of Oil and Natural Gas prices as required	-	-	-	-	-	-	-
Task Order #3	Produce a set of forecast world oil price paths over time for SFC's use in financial analysis of proposed synthetic fuels projects	(Gene Peters)	CPFF	10/21/85 Open	$26,775	$15,818.65	-	All work completed.
Amendment #1	-	(Ken Leonard)	-	-	-	-	-	New Monitor.
SFC-82-034-A Larry Storch	Provide legal counsel to IG & Dep. IG when required	IG/Dep. IG (Tom Holleran)	Legal Counsel Agreement	7/1/82 Open	$50/hr + exp. Paralegal assistance at NTE $20/hr and NTE: $1,000 for such assistance, per month.	$14,973.70	N/A	Active.

SFC ACTIVE CONTRACTS - AS OF 1/31/86

CONTRACTS BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Virginia Health Plan (Network)	Provide employees with individual group, medical insurance	Admin (Sondra Gillice)	Insurance Monthly Premium	4/1/85 Open	N/A	$1,843.27	N/A	In process of terminating contract due to Corporation's status.

CONTRACTS COMPLETED DURING JANUARY

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-84-018-C The BDM Corporation	Provide assistance with documentation needed to effect a timely closing of financial assistance agreements tentatively approved by the SFC Board of Directors	Projects	Basic Task Order Agreement	4/24/84-Open	To be Determined by Task	$2,479.68 Purchase Order	-	Contract terminated January 17, 1986.
Letter Agrmt.	Assist in preparing documentation needed to support anticipated award of financial assistance agreements to the Keystone and Union Parachute Creek	Projects	Letter Agrmt	8/16/84-Open	NTE $40,000	-	-	Task Order #1 to follow.
Task Order #1	Same as Ltr. Agrmt. above.	(Dick Shanklin)	T.O. #1	8/16/85-9/30/85	Total NTE $48,503.00 including ltr. agrmt.	$29,472.95	-	Terminated.
Amendment #1	-	-	-	New end 10/20/85	-	-	-	-
SFC-83-008-C AMS (American Management Systems)	Provide documentation and technical support of the SPAR Financial Modeling System.	Finance	Time and Materials	5/6/83-5/5/84	NTE $75,000 (See Amend. #1, 3 & 4))	$182,786.22	N/A	Contract to be terminated February 14, 1986.
Amendment #1	-	-	-	Change end date to 5/5/85	New NTE Amount of $150,000	-	-	-

CONTRACTS COMPLETED DURING JANUARY (Cont'd)

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #2	-	John Harris	-	-	-	-	-	Contract Monitor changed from Bud Thornber to John Harris
Amendment #3	-	-	-	Change end date to 10/1/85	New NTE Amount of $185,000	-	-	-
Amendment #4	-	-	-	Change end date to 5/5/86	New NTE Amount of $225,000	-	-	-
Amendment #5	-	Paul Stracke	-	-	-	-	-	Contract Monitor changed from John Harris to Paul Stracke.
SFC-82-010-C Badger Energy, Inc.	Project cost engineering support	Projects (John Scango)	Basic Task Order Agreement	10/6/82-Open	To be Determined by Task	$204,981.47 (Total of all Tasks to date)	N/A	Contract terminated January 17, 1986.
SFC-82-001-C Data Resources Inc.	Analyze, on a deterministic and probabilistic basis, proposed projects	Finance	Basic Task Order Agreement	3/25/82-2/29/84	NTE $49,825 (Total of all Tasks)	$26,059.62	N/A	Contract terminated January 24, 1986.
Task Order #1	Financial modeling for evaluation of proposed projects	Finance	Task Order No. 1	3/25/82-2/29/84	Est. @ $25,000	-	N/A	Time extended with no additional cost to facilitate completion of the Task Order.
Letter Amendment	-	-	-	New End date 3/25/85	NTE amount increased to $45,000	NONE	-	Extended term of Agreement to 3/25/85 and increased dollar amount to $45,000.
Amendment No. 1	-	-	-	New End date 1/19/86	-	-	-	-

CONTRACTS COMPLETED DURING JANUARY (Cont'd)

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-84-023-C Equitable Relocation Corporation	Agent to Corporation for purchase and resale of relocated employees' homes	Admin (Sondra Gillice)	Basic Agreement between the parties	9/01/84-Open	3.5% of resale value of each house	$88,287.82	N/A	Contract terminated effective April 1, 1986.
SFC-84-019-C Georgetown University	National Security Analysis in commercial synthetic fuels production capability	Establish on a Task Order basis	Task Order	5/11/84-Open	To Be Determined by Task	$11,433.75	N/A	Contract terminated January 27, 1986.
SFC-84-004-C Hagler Bailly & Company	Analysis of determinants on private sector synthetic fuels investment decisions	Establish on a Task Order basis	Basic Agreement	1/11/84-Open	To be determined by Task	NONE	N/A	Contract terminated January 27, 1986.
SFC-84-005-C Hagler Bailly & Company	Development and application of methods and techniques for assessment of the cost and benefits of alternative synthetic fuels investment strategies	Establish on a Task Order basis	Basic Agreement	1/11/84 Open	To be determined by Task	$39,146.68 Total all Tasks	N/A	Contract terminated January 27, 1986.
SFC-84-006-C Lewin & Associates	Assessment of certain policy-oriented aspects of synthetic fuels resources defined in the Energy Security Act	Establish on a Task Order basis	Basic Agreement	1/19/84-Open	To be determined by Task	$113,100.00 Total all Tasks	-	Contract terminated January 27, 1986.
SFC-82-011-C The Lummus Company, Inc.	Project cost engineering support	Projects (John Scampo)	Basic Task Order Agreement	Issued on 12/8/82-Open	To be Determined By Task	$151,840.44 (Total of all Tasks)	-	Contract terminated January 27, 1986.
Micro Services, Inc.	Provide services of a skilled computer operator(s) to the cost group to input, extract, and present data in formats to suit specific requirements	Projects (John Scampo)	Service Agmt.	7/25/85-8/31/85	NTE $25,000	$5,[illegible]	-	Contract terminated January 27, 1986.

CONTRACTS COMPLETED DURING JANUARY (Cont'd)

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #1	-	-	-	Extend end date to 11/30/85	-	-	-	End date extended.
Amendment #2	-	-	-	Extend end date to 5/31/86	-	-	-	-
SFC-84-017-C The Mitre Corporation	Provide assistance with documentation needed to effect a timely closing of financial assistance agreements tentatively approved by the SFC Board of Directors.	Projects	Basic Task Order Agreement	4/24/84-Open	To be Determined by Task	$47,730.03	N/A	Contract terminated January 14, 1986.
Ltr. Agrmt.	Provide the Corporation's Office of Environment with environ. analysis and documentation support for the Parachute Creek Phase I/II, Seep Ridge, Forest Hill and Keystone projects.	E & I (Environ) (Andy Lawrence)	Ltr. Agrmt.	8/23/85-10/31/85	$25,000	$5,000	-	-
Task Order #1	See letter Agrmt.	-	Task Order	-	NTE $47,925 including Ltr. Agrmt.	-	-	-
Amendment #1	-	-	-	Extend end date to	-	-	-	-
SFC-82-017-C NUS Corporation	Project cost engineering support	Project (John Scamp)	Basic Task Order Agreement	Issued on 10/28/82-Open	To be Determined by Task	$190,645.57 (Total of all tasks)	N/A	Contract terminated January 27, 1986.

CONTRACTS COMPLETED DURING JANUARY (Cont'd)

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Task Order #9	Estimate the value of methanol and mixed alcohols produced by the Utah Methanol Project as blending stocks under the DuPont and Arco waivers in the Utah gasoline market.	Projects (Harvey Fein)	Task Order	12/6/85 3/30/86	$39,490	-	-	Task Order terminated on December 20, 1985.
SFC-83-002-C The Rand Corporation	Development of qualitative and quantitative descriptions, analyses and assessments related to the benefits, costs and risks associated with pioneering synthetic fuel projects. Specific tasks to be assigned.	Establish on a Task Order basis	CPFF Task Order	4/15/83- 7/15/84	$249,700.00 (Estimated For Initial Task Orders) + $29,811 for Task Order #4	$337,126.42 (Total of all Task Orders)	-	Contract terminated January 27, 1986.
Amendment #1	-	-	-	End date now open	-	-	-	-
Letter Agrmt.	Assessment and analysis of the extent to which "long term" operation of the Great Plains SNG facility in Beulah, ND would further the programmatic goals of the Corporation	Finance	Ltr. Agrmt.	7/8/85-	$15,000	-	-	-
Task Order #5	Same as Letter Agrmt.	Finance (G. Peters)	Task Order	7/8/85- 9/9/85	$43,000	-	-	-
Amendment #1	-	-	-	New end date 9/30/85	-	-	-	-

CONTRACTS COMPLETED DURING JANUARY (Cont'd)

CONTRACT NO/ CONTRACTOR	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TYPE OF CONTRACT	TERM	PRICE/ EST. COST	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-82-013-C Stearns-Roger Services, Inc.	Project cost engineering support	Projects (John Scango)	Basic Task Order Agreement	10/4/82- Open	To be Determined by Task	NONE	N/A	Contract terminated January 27, 1986.
Amendment #1	Administrative change for billing purposes	-	-	-	-	-	-	-

SECTION II. A

SFC ACTIVE CONSULTING AGREEMENTS AS OF 1/31/86

CONSULTING AGREEMENTS ISSUED DURING JANUARY

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-86-004-A Covington & Burling	Provide legal advice to the Directors regarding the nature and extent of the Directors and Officers liability insurance policy coverage	Legal (March Coleman)	1/17/86-2/15/86	NTE $2,500	-	-	All work completed. Agreement to closed out 2/15/86.

SECTION II. B.

SFC ACTIVE CONSULTING AGREEMENTS AS OF 1/31/86

BROUGHT FORWARD FROM DECEMBER

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-83-039-A George G. Buck Consulting Actuaries	Provide guidance and recommendations for the Corporation's Retirement/Savings Plan and related matters	Admin (Sondra Gillice)	9/6/83-Open	NTE $2,500	$21,321.00 (See Amendments)	N/A	No action.
Amendment #1	Prepare a draft and final report on various alternative modifications to the Corporation's Retirement Plan.	-	-	$NTE $10,500	-	-	Completed.
Amendment #2	-	-	-	Change NTE amount to $20,000	-	-	-
Amendment #3	-	-	-	-	-	-	Change in rates for several individuals but no increase shall be more than 10% or $4.00 without the consent of the Corporation.
Amendment #4	-	-	-		-	-	Same as Amendment No. 3.
Amendment #5	-	-	-	NTE amount increased to $27,500	-	-	-
Amendment #6	-	-	-	NTE amount increased $32,500			Changes in rates for several individuals.
Amendment #7	-		-	-	-	-	Two additional individuals added to rate schedule.

SFC ACTIVE CONSULTING AGREEMENTS AS OF 1/31/86

BROUGHT FORWARD FROM DECEMBER (Cont'd)

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-82-036-A Caplin & Drysdale	Advise General Counsel in tax matters/development, structuring and negotiation of projects	Legal Srvcs (Jeanine Matte/A. McDonald)	7/20/82- Open	NTE $24,000	$64,828.52 (See Amend. #3)	N/A	No work performed in January. Additional work as needed. Contract to be terminated February 28, 1986.
Amendment #1	-	-	-	-	-	-	Incorporates new schedule of hourly rates effective 11/1/82.
Amendment #2	-	-	-	Increase NTE Amount to $54,000	-	-	A new schedule of rates for various Personnel added.
Amendment #3	-	-	-	New NTE Amt. $79,000	-	-	Hourly rate for two Caplin employees lowered.
Amendment #4	-	-	-	-	-	-	Add additional attorney to Schedule of Hourly Rates.
SFC-82-044-A Caplin & Drysdale	Advise and assist in the implementation of an employee retirement/ savings plan (legal counsel)	Legal Srvcs (Bill O'Quinn)	8/5/82- Open	NTE $10,000	$84,583.34 (See Amends.)	N/A	Continued activity relating to RS plan termination actions.
Amendment #1	Continuation of above and increase in funds from $10,000 to $16,000	-	8/5/82 Open	NTE amount increased from $10,000 to $16,000	-	-	On call as needed.
Amendment #2	Legal services relative to implementation of Corp. Retirement/Savings Plan	-	8/5/82- Open	NTE amount increased from $16,000 to $25,000	-	-	On call as needed.
Amendment #3	Same as above.	-	8/5/82- Open	-	-	-	Incorporates new schedule of hourly rates effective 11/1/82.

SFC ACTIVE CONSULTING AGREEMENTS AS OF 1/31/86

BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #4	Additional work with respect to tax laws and ERISA in connection with the implementation and application of the provisions of the Corporations Retirement and Savings Plans.	-	8/5/82-Open	NTE amount increased from $25,000 to $50,000	-	-	New work added as shown in "Scope".
Amendment #5	Provide advice in respect to the legality of proposed changes to the Corporation's retirement and thrift plans and provisions of the incentives to employees under the ESA.	-	-	-	-	-	Additional Scope of Work added.
Amendment #6	-	-	-	Change NTE Amount to $100,000	-	-	Hourly rate for two Caplin employees lowered.
SFC-85-018-A Robert E. King	Provide expert advice and assistance to the Projects Group relative to implementation and monitoring of "Davis-Bacon Act" provisions applicable to Government financed construction projects and other labor standard issues necessary	Projects (Charles Cowan/John Scango)	9/8/85-9/13/85	$480/day NTE $2,400 + travel & other exp.	$7,854.39	-	Completion of outline for SFC Administration of Davis-Bacon Act.

SFC ACTIVE CONSULTING AGREEMENTS AS OF 1/31/86

BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #1	Develop an outline together with a discussion of a program, to implement and administer the Davis-Bacon Act provisions for the construction, repair, or alteration of synthetic fuels projects as required by Section 175(c) of the "Energy Security Act."	-	Extend end date to 11/1/85	NTE amount increased to $10,000	-	-	Completed.
Amendment #2	-	-	Extend end date to 4/30/86	Increase NTE to $25,000	-	-	
Hossaman, Guthner, Knox & Elliott	Provide legal services as needed to the Corporation in respect of matters of California and federal law arising with the award of assistance to the Cool Water Project	Legal Srvcs (P. von Turk)	5/20/83-Open	Variable fees ranging from $72/hr to $157.50/hr. Sponsors pay first $112,500 SFC the next $112,500 and 50/50 thereafter.	$111,113.76	$1,000	No work performed in January. Possible transfer to Treasury for assistance during monitoring.

SFC ACTIVE CONSULTING AGREEMENTS AS OF 1/31/86

BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-84-018-A Nossaman, Guthner, Knox & Elliott	Provide legal counsel to the Corporation in respect of matters of Colorado and federal law arising in connection with the possible award of financial assistance to the Union II Project	Legal Srvcs (Jeanine Matte)	3/30/84-Open	Variable fees ranging from $90/hr to $171/hr. Sponsors pay first $150,000 SFC the next $75,000 and 75/25 thereafter.	$12,544.40	-	No work performed in January.
Amendment #1	-	-	-	-	-	-	Administrative change. Add "Other Available Personnel."
SFC-84-019-A O'Melveney & Myers	Provide legal counsel to matters of law arising in connection with the possible award of the Dow Syngas Project	Legal Srvcs (Jeanine Matte/ Shields)	4/10/84-Open	Variable fees ranging from $40/hr to Sponsor pays the first $50,000; SFC pays rest.	NONE	-	No work performed in January. Possible transfer to Treasury for assistance during monitoring.
Amendment #1	-	-	-	-	-	-	Add other personnel to Exhibit A.
Amendment #2	-	-	-	-	-	-	Add other personnel to Exhibit A.
Amendment #3	-	-	-	Add additional names to fee schedule			

SFC ACTIVE CONSULTING AGREEMENTS AS OF 1/31/86

BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #4	Support the Corporation in its participation in the ad hoc interagency force to restructure the loan to Great Plains from the Federal Finance Bank and the terms of a possible award of price guarantee assistance by the Corporation to Great Plains	-	-	Varying fees + expenses	-	-	-
SFC-85-015-A Schiff, Hardin & Waite	Provide legal services to the Corporation in matters of Colorado, federal and other law arising in connection with the amendment and possible award of financial assistance to the Union Oil Project	Legal (Len Rawicz)	8/12/85-Open	Varying fees ranging from $75 to $180/hr.	$188,038.85	$200,000	Work in December involved drafting of collateral agreements and participation in external and internal discussions.
SFC-85-016-A Schiff, Hardin & Waite	Provide legal services to in respect of matters of Utah, federal and other law arising in connection with the possible award of financial assistance to the Seep Ridge Project	Legal (Len Rawicz)	8/15/85-Open	Varying fees ranging from $75 to $180/hr.	$131,614.59	$200,000	No work performed in January by contractor. Contract being terminated.

SFC ACTIVE CONSULTING AGREEMENTS AS OF 1/31/86

BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-84-017-A Schiff, Hardin & Waite	Provide legal counsel to the Corporation in respect of matters of law arising in connection with the possible award of financial assistance to the Cathedral Bluffs Project	Legal Srvcs (Jeanine Matte)	3/23/84-Open	Variable Fees ranging from $150/hr to $60/hr. SFC pays first $206,000, thereafter CB pays 50%	$183,736.96	$200,000.00	No work performed in January. Contract being terminated.
SFC-85-008-A Schiff, Hardin & Waite	Provide legal services in respect of matters of law arising in connection with the possible award of financial assistance to the Forest Hill Project	Legal Services	4/1/85-Open	Variable Fees ranging $180/hr to $67/hr. Greenwich pays first $175,000 & SFC pays next $75,000 and Greenwich pays 662/3% of excess over $75,000	$74,142.68	$75,000	No work performed in January. Possible transfer to Treasury for assistance during monitoring.

SFC ACTIVE CONSULTING AGREEMENTS AS OF 1/31/86

BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-83-006-A Towers, Perrin Forster and Crosby	Assist in preparation of a Statement-of-Work for the recompeting of the Corporation's Medical plan and in analyzing proposals received	Admin (Sondra Gillice)	2/10/83-4/29/83	NTE $6,600 (See Amends. 3 & 5)	$20,877.75	N/A	Contacted TPF&C with regard to IRS inquiry re 1985 5500 filings.
Amendment #1	Extends at no cost the term of the Agreement.	Admin	Extends end date to 7/15/83	No add'l cost	-	-	To allow for implementation of any possible changes to Health Plan.
Amendment #2	Administrative change no increase in cost or end date	-	-	No add'l cost	-	-	Add additional individuals to provide support from time to time.
Amendment #3	Assistance from time to time on highly technical matters relevant to the operation of SFC benefit plans and legislated employee regulations	-	Extends end date to 12/31/83	NTE amount increased from $6,600 to $14,100	-	-	End date changed to 12/31/83 and NTE amount changed to $14,100, in order to allow occasional access to TPF&C for specific assistance re: personnel policy matters.
Amendment #4	-		-	-	-	-	Additional persons added to work on the Contract.
Amendment #5	-	-	Extends end date to 12/31/84	Change NTE $14,100 to NTE $25,000	-	-	-
Amendment #6	-	-	-	New fee schedule	-		-

SFC ACTIVE CONSULTING AGREEMENTS AS OF 1/31/86

BROUGHT FORWARD FROM DECEMBER CONT'D

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #7	-	-	Extends end date to 12/31/85	-	-	-	-
Amendment #8	-	-	Extends end date to 12/31/86	New fee schedule	-	-	-
SFC-85-017-A Whitney & Dempsey	Provide expertise in negotiation and documentation of cost-sharing agreements and in labor law affecting government-financed construction contracts (e.g. Davis Bacon issues.)	Legal (Len Rawicz)	9/4/85-10/1/85	$135/hr. NTE $10,000 + expenses	$10,872.85	-	Contract completed January 31, 1986.
Amendment #1	-	-	Extends end date to 12/1/85	NTE now increased to $25,000	-	-	
Amendment #2	-	-	Extends end date to 2/1/86				

CONSULTING AGREEMENTS COMPLETED DURING JANUARY

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
SFC-85-004-A Dr. William Brigham	Provide expert opinion on the adequacy of the heavy oil resource under the Hop Kern leases, and attend a comprehensive engineering review of the project in January and advise the Corp.	T & E (Charles Perry)	1/1/85-2/28/85	Fixed Price $5,000 + exp.	NONE	$6,000	Work completed and final report received. Awaiting final billing.
SFC-84-006-A Beveridge DeGrandi & Weilacher	Provide legal services to the Corporation re: ownership, licensing, use of patents, technology and technical know-how, including issues requiring - assessment of competing claims based on patents licenses, and intellectual property.	Legal Services (Jeanine Matte/ March Coleman)	12/5/83-Open	Compensation in accordance with the consultant's fee schedule + expenses	$10,537.54	N/A	Terminated January 31, 1986.
SFC-86-001-A Covington & Burling	Render a legal opinion certain discussions among the Board members constituted a "Board Meeting"	Legal (March Coleman)	10/1/85-10/31/85	NTE $10,000	$5,312.60	-	Completed. Awaiting final billing.
SFC-85-001-A Hagler Bailly & Company	Assist the Director of Negotiation in efforts leading to the documentation of assistance agreements which have reached the term sheet stage.	Projects (Ralph Blackwell)	10/1/84 - 4/1/85	$92/hr. NTE $22,000 (See Amend. #2, #4 & #5)	$50,764.00	N/A	Agreement completed. Awaiting final billing.
Amendment #1	-	-	Extend to 9/30/85	-	-	-	-

CONSULTING AGREEMENTS COMPLETED DURING JANUARY (Cont'd)

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #2	Provide independent advice and input to be used to develop recommendations to any needed Cool Water Commitment language revisions.	Frank McElroy	6/24/84-7/30/85	$92/hr. plus expenses	-	-	-
Amendment #3	Provide independent advice and input into the development of documentation for the Seep Ridge project	Skila Harris	Extend end date to 10/31/85	-	-	-	-
Amendment #4	Provide independent advice and input into the development of documentation for the Union Oil Parachute Creek Price and Loan Guarantee.	Dick Keegan	-	New NTE amount $50,000	-	-	-
Amendment #5	-	-	Extend end date to 12/31/85	New NTE amount $60,000	-	-	-
SFC-82-055-A Hay Associates	Evaluate and review senior Corporation positions and give general guidance re: Corporation's incentive and other compensation issues as appropriate.	Admin (Sandra Gillice)	1/3/83-12/30/83	NTE $10,000	$41,576.10 (See Amends.)	N/A	Terminated 11/27/85.
Amendment #1	Additional services relative to Senior Management Study.		-	NTE amount increased from $10,000 to $22,000	-	-	-

CONSULTING AGREEMENTS COMPLETED DURING JANUARY (Cont'd)

CONTRACT NO. CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #2	Provide services to evaluate and review senior Corporation positions and certain other benchmark jobs, and general advice and guidance re: wages, incentive and other compensation issues.	-	-	NTE amount increased from $22,000 to $42,000	-	-	New work added as shown in "Scope".
Amendment #3	-	-	-	-	-	-	Changes the hourly rate of the "Partner and Sector Manager" category from $140 to $150.
Amendment #4	Extends the Agreement until Dec. 31, 1984	-	1/3/83 12/31/84	NTE $42,000	-	-	-
Amendment #5	-	-	-	-	-	-	Changes the hourly rate structure.
Amendment #6	Extends the Agreement until Dec. 31, 1985	-	1/3/83-12/31/85	NTE amount increased to $47,000	-	-	Extends agreement for 1 year and increases amount to $47,000.
Amendment #7	-	-	-	-	-	-	Add new schedule of hourly rates.
SFC-85-010-A Hycal Energy, Laboratories, Inc.	For the specific service of Dr. Douglas Bennion to analyze and give his expert opinion on the adequacy of the data base, project design, expected oil recovery from the specified field resource of the Forest Hill project and report his findings to the Corporation	Projects (Bill Gadal)	4/28/85-6/30/85	$20,000 + expenses (See Amend. # 1)	$21,247.79 (See amend. #2)	-	Agreement completed.

CONSULTING AGREEMENTS COMPLETED DURING JANUARY (Cont'd)

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Amendment #1	-	-	Extend to 9/30/85	NTE increased from $20,000 to $30,000		-	-
Amendment #2	-	-	Extend end end date to 12/31/85	-	-	-	-
Amendment #3	-	Change Monitor to Skila Harris	-	-	-		
Amendment #4	-	-	6/6/83-7/31/84	No cost extension	-	-	-
Amendment #5	-	-	6/6/83-10/30/84	NTE amount $53,000	-	-	Increase funds by $3,000
Amendment #6	-	-	Extend to 5/31/85	-	-	-	No cost extension.
Amendment #7	-	-	Extend to 12/31/85	-	-	-	-
SFC-84-020-A O'Melveney & Myers	Provide legal counsel to to the Corporation in respect to matters of law arising in connection with the possible award of financial assistance to the Great Plains Gasification Associates Project	Legal Srvcs (Jeanine Matte/ Chet Shields)	5/7/84-Open	Variable fees ranging from $40/hr to $225/hr. Sponsor pays the first $175,000; SFC pays the next $75,000 and 75/25 thereafter.	$53,613.70	$75,000	Contract terminated January 31, 1986.

CONSULTING AGREEMENTS COMPLETED DURING JANUARY (Cont'd)

CONTRACT NO/ CONSULTANT	SCOPE OF WORK	COGNIZANT GROUP & MONITOR	TERM	COMPENSATION	EXPENDITURES TO DATE	CONTRACTOR'S EST. $ TO COMPLETION	STATUS/REMARKS
Ruff, Larry E.	Support the Corporation's Finance Group by providing advice and assistance to that Group in its Strategy development work including preparation of the Corporation's Recommended Comprehensive Strategy report to the Congress	Finance	12/19/84-3/18/85	$60/hr.	$55,205.68	-	Contract completed in December.
Amendment #1	Now reports to the Comprehensive Strategy Committee of the Board	Vice Chairman	End date extended to 7/19/85	-	-	-	-
Amendment #2	-	-	End date extended to 10/17/85	-	-	-	-
Amendment #3	-	-	End date extended to 1/15/86				
SFC-86-002-A Dale R. Silbernagel	Provide mining engineering consulting services of a temporary and intermittent nature	T & L (Charles Perry)	11/4/85-1/31/86	$300/day + travel & other exp.	$2,284.96	-	Completed.
Task #1	Conduct a review of the proposed mining operations for tar sands mining product at P.R. Springs, Utah and prepare a report		11/6/85-11/12/85	NTE $2,000 + exp.	$2,284.96	-	Task completed.

Mr. YATES. All right, moving expenses, $49,000 for moving. What is a generic study?

Mr. MILLER. The Energy Security Act provides, in addition to the regular administrative expenses, for a category of cost called generic studies and specific reviews of projects, and these are contracts that were separately authorized in Section 120, as far as appropriation limitations.

Mr. Bayrer can give you better examples of generic studies, but they have to do with studies of the energy field across the board, and we have certain of those that we are now in the process of closing out.

Mr. YATES. Are they with different people than those listed in your contracts and consultants?

Mr. MILLER. Those are included in this item that I am giving you for the record.

Mr. YATES. They are?

Mr. MILLER. Yes.

Mr. YATES. So there is nobody who draws money from you whose name is not in that list?

Mr. MILLER. Anyone with a contractual relation with the Corporation is in that document.

Mr. YATES. What about the lease penalty contingency of $2,200,000?

Mr. MILLER. When we moved into the building we are currently occupying, we had a lease that went through April of 1987.

We have, in fact, a legitimate claim on the lease through April of 1986, and we are currently in negotiation with the landlord and with the General Services Administration. If those negotiations come out worse case, we may have to pay rent through the term of the lease.

Mr. CONTE. Is that a GSA building?

Mr. MILLER. No, sir.

Mr. YATES. Where are you located?

Mr. MILLER. 2121 K Street, Northwest.

Mr. CONTE. Why couldn't you sublet that for a year?

Mr. MILLER. We are trying, sir.

Mr. CONTE. Mr. Chairman, may I ask another question and submit the rest?

Are there anymore employees? Let me rephrase that. Are any former Corporation employees receiving annuity payments?

Mr. MILLER. No, sir.

Mr. CONTE. None?

Mr. MILLER. We have what is called a Defined Contribution Retirement Plan. If an employee leaves the Corporation or has left the Corporation, and if they were vested in the plan, after they have left they get back their piece of the retirement plan from the trustee, the American Security Bank. They don't draw a retirement annuity similar to Civil Service. There is no unfunded liability. It is just what goes in comes out.

Mr. CONTE. When is the plan vested?

Mr. MILLER. After a year.

Mr. CONTE. After one year. How much have you paid out already?

Mr. **Miller**. I would have to furnish that for the record, Mr. Conte. I don't know offhand.

[The information follows:]

From the beginning of the Retirement Plan in 1982 until its termination as of January 31, 1986, the Corporation paid $1,860,144.

Mr. **Conte**. It is quite a bit according to the newspaper accounts.

Mr. **Miller**. It runs around 5 percent of salary.

We have paid out that 5 percent. Please understand that the IRS has approved the plan; that money goes into a trustee bank and the employees have a right to choose how their funds will be invested in what we call a liquidity plan, which is all interest, or an equity plan which involves investment in stocks or some mix of the two.

The people who chose the Equity Plan haven't made out too well, given the ups and downs of the portfolio of the bank.

Mr. **Conte**. All they get after one year of vested interest is exactly what they put in the retirement. There is no one getting a pension?

Mr. **Miller**. No one is getting a pension, no, sir. The Corporation contributes.

Mr. **Conte**. Oh, the Corporation contributes.

Mr. **Miller**. It is a non-contributory defined contribution plan. That is the way ERISA is written, and under an approved plan, what is paid into the trustee bank once it is vested under ERISA, it is held in trust by the bank for the individual. The Corporation cannot get it back. That is an IRS approved plan.

Mr. **Conte**. In one year, they are vested. I have never heard of that. For Federal employees, it takes five years before they get vested.

Mr. **Miller**. There are a number of different vesting schemes throughout the country.

Mr. **Conte**. That is a scheme all right. Thank you, Mr. Chairman.

Mr. **Yates**. Counsel, a question. How many Board meetings were there within the final month before passage by the Congress of its bill?

Mr. **Tashman**. Up to December 19?

Mr. **Yates**. Yes.

Mr. **Tashman**. My guess is only one.

Mr. **Yates**. How often did the Board meet the past three months before passage of the bill?

Mr. **Tashman**. As a rule, the Board would meet once a month.

Mr. **Yates**. May we have the minutes of each of the three months preceding the ending of the Board? Do you know whether there were any memorandums filed by your offices as a result of conversations with officers, directors of the corporation?

[**Committee note**.—Portions of these minutes have been withheld from the public pursuant to the authority provided by Section 116(f)(2) of the Energy Security Act. The constitute trade secrets and other confidential business materials by the strictures of Section 1905 of Title 18 of the United States Code.]

[The information follows:]

MINUTES
of a
meeting
of the
BOARD OF DIRECTORS
of the
UNITED STATES SYNTHETIC FUELS CORPORATION

September 24, 1985

The meeting was convened at 9:40 a.m., September 24, 1985, in room 503, 2121 K Street, N.W., Washington, D.C., pursuant to the call of the Chairman and after public notice of the meeting as required by Section 116(f) of the Energy Security Act (42 U.S.C. 8712)(f)(1)(1983 Supp.), published in the Federal Register on September 20, 1985. A quorum of the Board being present, Edward E. Noble, Chairman of the Board of Directors, called the meeting to order and presided. In addition to the Chairman, the following members of the Board were present:

Thomas J. Corcoran
Paul W. MacAvoy
Eric H. Reichl
Victor A. Schroeder

Leonard Rawicz, Vice President, General Counsel and Secretary, acted as Secretary of the meeting.

Chairman's Opening Remarks

The full text of the Chairman's opening remarks, as presented to the meeting, is affixed to these minutes as Attachment A.

Public Release of August 21 Minutes

On a motion duly made by Mr. Corcoran and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that it is the judgment of the Board of Directors that those parts of the minutes of the closed portion of the meeting of the Board of Directors held on August 21, 1985 deleted from said minutes relating to the Board's deliberations respecting the Union Oil Parachute Creek, Utah Methanol, Keystone and Seep Ridge Projects may properly be withheld from public disclosure pursuant to the provisions of subsections 116(f)(1)(B)(ii)(II) and 116(f)(1)(C) of the Energy Security Act.

Consideration of Minutes from August 13 Discussion

Mr. Rawicz presented a resolution for the Board's consideration concerning approval and release of minutes of an informal discussion held among four members of the Board of Directors on August 13, 1985. Mr. March Coleman, Assistant General Counsel - Corporate & Litigation, prepared a summary of that discussion after consultation with the participants. Mr. Corcoran asked Mr. Coleman whether the Energy Security Act (ESA) defined the term "meeting," or provided any guidance for the Board on what constitutes a "meeting." Mr. Coleman replied that the ESA does not define the term "meeting"; it provides that all meetings "held to discuss official business of the Corporation" shall be open to public observation. Mr. Coleman stated that the Joint Conference Report and other legislative history of the ESA make it plain that the Sunshine-related provisions of section 116(f)(1) of the ESA were taken from and patterned on the Government in the Sunshine Act (Sunshine Act), which is generally applicable to Federal agencies. Mr. Corcoran asked if the Corporation had established an official policy in this area. Mr. Coleman stated that the Board of Directors had adopted a policy in 1981 which states that it is the Corporation's intent to follow the spirit of the Government in the Sunshine Act, although the Corporation is not subject to that Act. In response to Mr. Corcoran, Mr. Coleman stated his conclusion that the informal discussions constituted a "meeting" for purposes of the Sunshine Act-related provisions of the ESA.

Mr. MacAvoy asked whether the Corporation's Policy required the Corporation to follow agency practice under the Sunshine Act in this instance. Mr. Coleman stated that the most appropriate authority in interpreting the Sunshine Act-related provisions of the ESA is the Sunshine Act and its interpretations, based on the Corporation's Policy and the legislative history of the ESA, and that the term "meeting" under the Sunshine Act has been construed by the courts to include discussions that effectively predetermine official actions and are sufficiently focused on discrete proposals or issues as to cause or be likely to cause individual members to form reasonably firm positions on matters that are, or are likely to arise, before them. In response to Mr. MacAvoy, Mr. Coleman stated that the Board had established the Policy; he stated that the Policy could be changed but that the Sunshine Act would remain the appropriate source for interpretation of the meaning of these ESA provisions.

Mr. MacAvoy, referring to the requirement of the ESA that all Board discussions of "official business" be open to public observation, asked what was the legislative history of the term "official business." He stated his view that discussion of the performance of a senior executive would not constitute "official business" of a firm in the private sector; he said that the business of the Corporation is to make contracts in order to generate new synthetic fuels technologies, and that the discussions on August 13 did not involve any such contract. Mr. Coleman noted that the Sunshine Act applies to government agencies, not private corporations. Mr. MacAvoy stated that treating personnel evaluations as "official business" would imply that government agencies are run for the purpose of generating personnel activities. Mr. Coleman stated that case law under the Sunshine Act has interpreted "official business" to include evaluation of senior agency personnel. Mr. MacAvoy stated that he could not accept that the August 13 discussions constituted "official business" of the Corporation unless the discussions related more directly to a letter of intent or solicitation. Mr. Coleman stated that he did not agree with that interpretation of the Sunshine Act and the ESA. Mr. MacAvoy stated that the senior executives of the Corporation did not deserve to be subjected to a public hearing whenever their performance is evaluated by Board members. Mr. Coleman stated that the issue was congressional intent; he noted that the Sunshine Act made public matters previously not conducted in public, and that the requirements of the Sunshine Act can place a burden on the conduct of agency business. Mr. Coleman stated that when a quorum of the Board meets and deliberates to consider possible Board actions involving senior executives of the Corporation, the law requires the discussions to be made public.

Mr. Noble stated that Mr. MacAvoy had brought up an important point. He said that he had no problem releasing the minutes in question, but was concerned about setting a precedent for release of personnel information, and whether people would be willing to work in such an environment. Mr. MacAvoy emphasized that the Corporation is not a federal agency; it is a Corporation designed to combine both public and private organizational forms in order to utilize resources effectively for a public purpose. He stated that it would not be possible to run a corporation with a mechanism requiring a public hearing each time an executive is criticized, especially when there is disagreement among the Board members over the performance of that executive. Mr. MacAvoy stated that he strongly objected to this case as a precedent-setting mechanism by which the distinguished senior staff of the Corporation could be pilloried in public. He stated that he would vote against the resolution on principle.

Mr. Noble suggested that the resolution be withdrawn and that the staff take another look at the issue. Mr. MacAvoy requested an opinion be obtained from outside counsel on whether the subject of the August 13 discussion was "official business" of the Corporation, with citations to law applicable to other quasi-public organizations.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Reichl, it was unanimously

> RESOLVED, that the resolution to approve the content and public release of a summary of the Board's informal discussions on August 13, 1985 be withdrawn for further study.

Approval of Financial Assistance to the Forest Hill Project

Mr. Frank Hill, Director-Finance, noted that the ESA requires the Corporation to consult with the Treasury Department to assess a financial assistance award's potential impact on U.S. capital markets before making such an award. The Corporation had requested that Treasury address that question with respect to the Forest Hill Project and had received a reply on September 10. The Treasury Department did not focus on the proposed price guarantees' impact on capital markets, but instead focused on the

Corporation's loan guarantee relative to the Office of Management and Budget (OMB) Circular A-70 dated August 24, 1985. In that Circular, OMB had instructed Federal entities to encourage risk sharing between private lenders and the U.S. government. In general, the Circular requires a loan guarantee to be structured so that private lenders bear a significant portion of the risk of loss. "Significant" is defined as at least 20 percent.

Mr. Hill stated that the Corporation has pursued the possibility of shared risk in its projects for a long time. In this case, the Corporation desired that the guaranteed lender also provide a $3.7 million unguaranteed term loan that would be used to refinance a roughly equal amount of existing debt. That concept was discarded because conflicting interests of the parties to the proposed loan made it difficult to agree upon documentation of inter-creditor arrangements, especially with respect to the exercise of remedies in case of a default. To cover the $3.7 million debt, the negotiators worked out an arrangement under which the sponsor's three principal stockholders would assume responsibility for approximately $2 million of unguaranteed debt and the Corporation would increase its guarantee by $1.7 million.

According to the OMB Circular, if a risk-sharing arrangement is not feasible, a 100 percent loan guarantee should be financed by the Federal Financing Bank (FFB); however, the ESA precludes the FFB from acting as a source of funds for the Corporation. In cases where the FFB cannot be used, the OMB Circular encourages maximum competition among potential lenders. Mr. Hill stated that the Forest Hill Project sponsor had aggressively sought lenders before settling on Morgan Guaranty Trust Company of New York. The staff's conclusion remains that the Commitment before the Board addresses the ESA requirements while minimizing Corporation assistance, has a minimum impact on capital markets and is consistent with the Corporation's program.

Mr. Hill reviewed the staff's analysis of the social costs and benefits of the Forest Hill Project, originally presented at the March 12, 1985 Board meeting. The staff used the method described in Appendix H of the Comprehensive Strategy for calculating the discounted present value of pretax cash flows from the Project, excluding Corporation assistance and any debt leveraging, discounted at a real rate of ten percent. Assuming an initial production of 1,750 BOD from the Project beginning in 1986, under the Corporation's median price scenario, second generation facilities consisting of units producing 5,000 BOD could be economically attractive without Corporation assistance by 1995. The Corporation's model also assessed a third generation of units producing 25,000 BOD. Mr. MacAvoy asked when the staff predicted that third generation production would begin. Mr. Hill replied that it could occur simultaneously with second generation production, but the economics would be better four or five years later, when the experience of the second generation plants could also be absorbed. The staff evaluation considered third generation production beginning in 1997. According to the Corporation's analysis, the net present cost of its assistance to the Forest Hill Project would be $27 million. Each second generation plant would add $19 million ($1985) of positive social benefits, and each third generation plant would add $165 million ($1985). Mr. MacAvoy asked how the staff differentiated between learning benefits from the Forest Hill Project and those from second generation plants when computing the value of third generation plants. Mr. Hill replied that third generation benefits are economies of scale and do not represent much learning from second generation plants. Mr. MacAvoy stated that the staff might be giving too much credit to the first generation Forest Hill Project, and that they might be understating the learning benefits of second generation facilities. He said that the results of the staff's analysis were very impressive and he was very pleased with the analysis.

In response to a request made by Mr. Noble, Mr. Andrew MacDonald, Special Counsel-Project Finance, enumerated the documents to be signed by the Corporation (Commitment to Guarantee, Credit and Guaranty Agreement, Guaranteed Notes, and collateral agreements among the Forest Hill Company, the Corporation and Morgan Guaranty Trust), including an agreement with the principal stockholders of the sponsor (Union Carbide Corporation, Core Laboratories International and the Law family) that would backstop certain covenants and other obligations which the principal stockholders have made in their capacity as stockholders and/or contractors.

Mr. Corcoran asked Ms. Skila Harris, Project Officer, to review the history of the Corporation's consideration of the Forest Hill Project. Ms. Harris replied that the Corporation first received a proposal from the Project under the Third General Solicitation, which called for a Maturity and Strength Review. Following successful conclusion of the Strength Review, the Project advanced to a Phase 2 Strength evaluation which was conducted simultaneously with negotiations. The sponsor also submitted the Project under the Fourth General Solicitation. The Project has been under constant evaluation for over two years.

Mr. Corcoran asked if Ms. Harris knew of any private sector projects using the oxygen fireflooding technology proposed by the sponsor. Ms. Harris said there were some pilot projects in Canada, but she was aware of no commercial-size project.

Mr. Corcoran referred to a September 23, 1985 Energy Daily article that reported on oil producers in California who are setting new oil production records every month, largely because of the enhanced oil recovery technology they are using in the heavy oil fields of Kern County, California. Mr. Corcoran asked Ms. Harris to explain the difference between the Forest Hill Project and the California producers. Ms. Harris stated that the private sector was using many different enhanced technologies, but none of those projects are using oxygen fireflooding in reservoirs as deep as the Forest Hill reservoir. Mr. Leonard C. Axelrod, Vice President-Technology and Engineering, stated that the California fields referenced in the Energy Daily article are not as deep as, and the oil is less viscous than, the resource to be used by Forest Hill. The California producers are generally using a steam flooding technology which would not be applicable to the Forest Hill Project's reservoir, and the economics of the California projects are aided by combining steam production with co-generation of electricity.

Mr. Corcoran asked what was the value of the sponsor's contributed equity. Mr. Hill replied that the sponsors have invested $12 million through the current month. Mr. Corcoran asked what kind of incentives the sponsor would have to build long-term facilities. Mr. Hill replied that the economic life of the field is 23 years, and that the sponsor would want to install equipment that would last at least that long. Mr. Corcoran asked the staff to describe the Project's relationship with the Department of Defense (DOD). Ms. Harris replied that the sponsor had contacted DOD to see if they had a requirement for the output from the Project, as required by the ESA. DOD had responded that they had no specific requirement and had declined further discussion on the matter. Mr. Corcoran requested a definition of the term "preference period," found on page 23 of the Commitment to Guarantee. Mr. MacDonald explained that "preference period" is defined as the period following repayment of the debt during which a trustee in bankruptcy could void the debt repayment. Mr. Corcoran asked how the preference period affected the Corporation. Mr. MacDonald replied that the provision had little effect on the Corporation. The Corporation's guarantee lasts throughout the preference period. Mr. Corcoran asked if the Corporation's security interest would continue through the same period. Mr. MacDonald replied that the security interest lasts until mortgages and security instruments are released.

Mr. Corcoran referred to the term "funding ratio" on page 26 of the Findings Report, and asked how the disbursement would operate. Mr. Hill replied that the first $4 million of eligible costs after January 1, 1985 would be funded by a 50:50 split of debt and equity; following that is a catch-up period in which eligible costs would be funded solely by drawdown of the guaranteed debt; during the final period, the ratio of debt to equity would be 1:2. The net result is a debt/equity ratio of approximately 53:47. In response to Mr. Corcoran, Mr. Hill stated that the sponsor's maximum cash exposure would be $20 million.

Mr. Corcoran asked the staff to explain the profit sharing provisions. Mr. Hill replied that the profit sharing period will last for 16 years from the cut-off date, which is defined as the date commercial production begins, or December 31, 1987, whichever is earlier. In the Corporation's median case, the Corporation would receive profit sharing payments of approximately $12 million.

Mr. Corcoran noted that section 9.6B on page 52 of the Commitment to Guarantee refers to a requirement for a quarterly report on environmental hazards. He stated that he was concerned that an emission might occur which would not be reported to the Corporation until three months later. Mr. Andrew Lawrence, Director-Environment, replied that accidental emissions must be reported to the Corporation on an ad hoc basis. In the quarterly report required by section 9.6B, the Project would report on on-going monitoring.

On a motion duly made by Mr. Corcoran and seconded by Mr. Reichl, it was unanimously

> RESOLVED, that the Board of Directors makes the following findings and determinations with respect to the award of loan guarantee and price guarantee assistance to the Sponsor and Borrower, as

incorporated in the Commitment to Guarantee and the Credit and Guaranty Agreement presented to this meeting:

A. The Forest Hill Project is a synthetic fuels project and the heavy oil to be produced is a synthetic fuel;

B. The recipient of financial assistance for the Forest Hill Project is a qualified concern;

C. An application for financial assistance for the Forest Hill Project has been submitted by the Sponsor in the manner and containing the information required by the Corporation under the Corporation's Third Solicitation for Synthetic Fuels Projects, dated August 19, 1982, and is the most responsive to the Solicitation in the tar sands/heavy oil category of such Solicitation;

D. In awarding financial assistance to the Forest Hill Project under the Third Solicitation, the Corporation has given preference to the least commitment of Corporation assistance, the lowest unit production cost and the priority forms of assistance. Additionally, in awarding financial assistance to the Forest Hill Project, the Corporation has considered:

1. diversity of technologies (including differing processes, methods and techniques);

2. a. the potential cost per unit of production of synthetic fuel from the Forest Hill Project;
   b. the overall production potential of the technology used in the Forest Hill Project, considering the potential for replication, the extent of the heavy oil resource to be produced by the Forest Hill Project, its geographic distribution, and its potential end use; and,
   c. the potential of the technology for complying with applicable regulatory requirements;

3. any specific tax credits directly associated with the Forest Hill Project, any financial assistance, which has been, will be or may be provided by federal or state agencies,

and the potential revenues generated by the Forest Hill Project from the production of non-synthetic fuel products;

4. promotion of competition; and,

5. the requirement of Section 127(f) of the Act that priority consideration be afforded to projects in states which indicate an intention to expedite all regulations, licensing and related government activities related to the project;

E. Heavy oil, the Product to be produced by the Forest Hill Project, is a domestic resource that offers significant potential for use as a synthetic fuel resource;

F. The Commitment to Guarantee requires the Borrower to develop, in consultation with the Department of Energy, the Environmental Protection Agency and the Natural Resources, Water and Environmental Section of the Office of the Governor of Texas, a plan, acceptable to the Corporation, for the monitoring of environmental and health related emissions from the Forest Hill Project;

G. The Commitment to Guarantee provides for reports and maintenance of records by the Borrower and the Sponsor, and access by the Corporation adequate to ensure compliance with the Commitment to Guarantee;

H. The Commitment to Guarantee requires the Borrower to provide for fair and reasonable participation by small and disadvantaged businesses in the Forest Hill Project;

I. The Commitment to Guarantee requires that the Borrower pay or cause to be paid construction wages at rates not less than those prevailing on projects of a similar character in the locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act;

J. The Commitment to Guarantee provisions ensure that the Borrower and Sponsor bear a reasonable degree of risk in the construction and operation of the Forest Hill Project. Loan guarantees and price guarantees are required for the viability of the Forest Hill Project and the Forest Hill Project is necessary to achieve the purposes of the Act;

K. The amount of the loan guarantee (including principal and an allowance for accrued interest) does not exceed 75% of the Corporation's initial estimate of the cost of the Forest Hill Project and the maturity of the guaranteed loan does not exceed the earlier of the useful life of the Forest Hill Project or 30 years;

L. In reviewing the need for loan guarantees, the Corporation has considered whether the Borrower and Sponsors would otherwise be unable, exercising prudent business judgment, to finance the Forest Hill Project, taking into account, among other factors, the availability of debt financing under normal lending criteria based on the Forest Hill Project assets;

M. The loan guarantee and the combination of assistance provided for in the Commitment to Guarantee encourages and supplements, but does not compete with or supplant, any private capital investment which would not otherwise be available to the Forest Hill Project on reasonable terms and conditions which would permit the Forest Hill Project to be undertaken;

N. The Commitment to Guarantee provides for security and collateral appropriate for the repayment of any fixed or contingent obligations to the Corporation;

O. The Commitment to Guarantee requires that in the case of default, all patents, technology and other proprietary rights resulting from or required for the Forest Hill Project shall be available to the Corporation or its designee to complete and operate the defaulting Forest Hill Project;

P. The Commitment to Guarantee provides for profit sharing on a fair basis;

Q. The Commitment to Guarantee provisions assure that the investors having an ownership or profit interest in the Forest Hill Project will bear a substantial after-tax risk of loss in the event of default or other cancellation of the Forest Hill Project;

R. The Corporation has consulted with the Secretary of Treasury and concludes that, to the maximum extent feasible, the timing, interest rate and substantial terms and conditions of the Commitment to Guarantee will have minimum possible impact on the capital markets of the United States, taking into account federal activities which directly or indirectly influence such capital markets;

S. The guaranteed sales price specified in the Commitment to Guarantee provides the minimum subsidy necessary to provide an adequate incentive in light of the projected prices of competing fuels and the requirements for economic and financial viability of the Forest Hill Project;

T. The period of price guarantee assistance will not exceed ten years from the initial production date (as specified in the Commitment to Guarantee) of synthetic fuel;

U. The Commitment to Guarantee requires the Borrower to pay a financial assistance fee of $300,000 and an annual loan guarantee fee of one-half of one percent of the loan guarantee outstanding;

V. The aggregate amount of financial assistance awarded or committed to the Forest Hill Project or to any one person, including such person's affiliates and subsidiaries, either directly or indirectly, does not exceed 15 percent of the total obligational authority of the Corporation; and,

W. The Commitment to Guarantee states the maximum aggregate liability of the Corporation for loan guarantees and price guarantee payments and the combination thereof computed in accordance with Section 152 of the Act; and, further

RESOLVED, that the Board of Directors hereby determines that the form of Commitment to Guarantee and Credit and Guaranty Agreement presented to this meeting contain such terms and conditions as are required to address the requirements of the Act or which are otherwise satisfactory to the Board of Directors; and, further

RESOLVED, that the Chairman be, and he hereby is, authorized in the name and on behalf of the

> Corporation to execute and deliver the Commitment to Guarantee and the Credit and Guaranty Agreement in the form presented to this meeting with such changes as may be permitted by the Act, and as may be approved by the Chairman, his execution thereof with such changes to be conclusive evidence of such approval and to deliver the Commitment to Guarantee and the Credit and Guaranty Agreement; and, further
>
> RESOLVED, that the Chairman and other appropriate officers of the Corporation be, and each of them hereby is, authorized and directed to do and perform, or cause to be done and performed, all such acts, deeds and things and to make, execute and deliver, or cause to be made, executed and delivered, such agreements, documents, certificates and instruments (including the endorsement of Guaranteed Notes) as may be necessary or appropriate to effectuate or carry out fully the purpose and intent of the foregoing resolutions, including the performance of the obligations of the Corporation under the Commitment to Guarantee and Credit and Guaranty Agreement.

Amendment of the Cool Water Contract

Mr. Frank N. McElroy, Jr., Contract Manager, reviewed a proposed First Amendment to the Corporation's financial assistance agreement with the Cool Water Project. The staff proposed that four provisions of that agreement be amended. In Article 6.1(c), an annual review of the Market Price Conversion Factor will be substituted for the quarterly review presently required. The Cool Water program manager has been added to Exhibit B as an additional "Authorized Representative" for all purposes; the program manager originally was an Authorized Representative for very limited purposes. The proposed amendments to Exhibits J and J-1 address technical aspects of the instrumentation systems, procedures, methodology and documentation used for the determination of Eligible Product and net electricity output. The new language incorporates several changes suggested by the "learning experience" of plant operation over the past year. Mr. McElroy stated that the amendment would have no material effect on the basis for price differential payments. Mr. Corcoran asked what was the financial impact of the amendment. Mr. McElroy stated that there should be no financial impact because the amendment was a technical and administrative change to "clean up" the contract and to improve the reliability and consistency of measuring techniques.

On a motion duly made by Mr. Corcoran and seconded by Mr. Schroeder, on a vote of 4-0 (Mr. Reichl abstaining), it was

> RESOLVED, that the Chairman and other appropriate officers of the Corporation be, and each of them hereby is, authorized in the name and on behalf of the Corporation to execute and deliver the First Amendment

> of the Price Guarantee Commitment in the form presented to this meeting with such changes therein as may be permitted by the Act and as may be approved by the Chairman or such officer, the execution thereof with such changes to be conclusive evidence of such approval; and, further
>
> RESOLVED, that the Chairman and other appropriate officers of the Corporation be, and each of them hereby is, authorized and directed to do and perform, or cause to be done and performed, all such acts, deeds and things and to make, execute and deliver, or cause to be made, executed and delivered, such agreements, documents, certificates and instruments as may be necessary or appropriate to effectuate or carry out fully the purpose and intent of the foregoing resolutions, including the performance of the obligations of the Corporation under the Price Guarantee Commitment, as amended.

Parachute Creek Program Environmental Monitoring Plan Outline

Mr. Noble stated that the the Corporation and Union Oil Company of California (Union) have been negotiating an amendment to the Union Phase I agreement which would modify the timetable for the payment of the $400 million in price guarantees provided for by this agreement and would make Union eligible to receive up to $500 million more in loan and price guarantees if Union installed and achieved production from a fluidized-bed combuster. Mr. Noble asked Mr. Lawrence to present Union's Environmental Monitoring Plan Outline for the Board's consideration.

Mr. Lawrence explained that the Environmental Monitoring Plan (EMP) Outline is prepared in consultation with the Department of Energy (DOE), the Environmental Protection Agency (EPA) and appropriate state agencies; Board approval of the EMP Outline is considered to be an essential part of the overall financial assistance agreement. The Board approved an EMP Outline for the Union Oil Company Parachute Creek Phase II agreement at its April 26, 1984 meeting. Union used this Outline as the starting point for drafting the Outline under consideration by the Board today. Mr. Lawrence stated that the new Outline follows the same general format as the April 1984 version but includes modifications to accommodate Project design changes. Specifically, the present Outline describes Union's plans for the monitoring of (1) the Phase I facility prior to addition of the fluidized-bed combuster (FBC); (2) the construction of the FBC; and, (3) the operation of the total facility. Union modified the Outline based on comments from the appropriate consulting agencies, and committed, by the addition of a Preface to its Outline, to use their best efforts to resolve those issues still outstanding during the development of the Environmental Monitoring Plan itself. Mr. Lawrence stated that the staff has found that the EMP Outline meets the acceptability requirements found in Section 6 of the Corporation's Environmental Monitoring Plan Guidelines. He thanked the consulting agencies for their timely response and their insightful comments.

Mr. Reichl asked what the staff anticipated Union's annual cost of monitoring to be. Mr. Lawrence stated that the cost of monitoring is included in the Project's cost estimate; he agreed to supply Mr. Reichl with the exact figure. Mr. Axelrod stated that he believed the figure was around $0.50/bbl.

Mr. Noble asked Mr. Lawrence for an appraisal of Union's commitment to environmental monitoring of the spent shale pile. Mr. Lawrence stated that the permit under which Union will dispose of spent shale has extensive monitoring requirements relating to pile stability, ability to reclaim the spent shale and runoff from the pile prior to reclamation. Project operation using the FBC would decrease the number of organic components in the spent shale, but the composition of the decarbonized spent shale would be much finer and more powdery, causing handling problems and the potential for windblown dust. Mr. Lawrence noted that environmental officials in the state of Colorado have echoed Chairman Noble's opinion that the Parachute Creek Project is a very important test case for environmental monitoring and for research on the environmental effects of oil shale projects. Mr. Noble stated that Union was very committed to doing a thorough monitoring job.

Mr. Corcoran stated that Mr. Lawrence's report was very encouraging, but he was concerned because the Colorado Department of Health had not commented on the most recent draft of the EMP Outline. Mr. Lawrence noted that the Department of Health had commented on the April 1984 draft, which had addressed monitoring requirements involving an FBC, but the Department had been unable to meet the Corporation's deadline for comments on the new draft. The Department of Health will comment on the EMP itself. Mr. Lawrence stated that DOE and EPA have thoroughly reviewed the Outline, as well as an Addendum supplied by Union in response to concerns of the agencies regarding Union's initial draft of the document. During their review, officials of EPA consulted with the EPA regional office in Colorado, which has in-depth knowledge of the environmental issues associated with oil shale development, and with EPA laboratory personnel who have been involved in environmental assessments of oil shale technology. In response to Mr. Corcoran, Mr. Lawrence stated that the EMP would be due 330 days after closing. The staff has staggered the due dates of EMP's from the various Corporation projects currently under consideration to avoid overloading the consulting agencies with the simultaneous review of several EMP's.

On a motion made by Mr. MacAvoy and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the Environmental Monitoring Plan Outline for the Union Oil Company Parachute Creek Project presented to this meeting be, and it hereby is, approved.

Status of Negotiations on the Parachute Creek Program Project

Mr. Noble informed the audience that the staff would make a brief presentation on the Union Oil Parachute Creek Project in the open session. Following the staff's presentation, the Board would go into closed session to discuss key financial terms for the Parachute Creek agreement. He said that the Board would return to open session in the afternoon.

Mr. Richard Keegan, Project Officer, summarized the progress of negotiations since the September 10, 1985 Board meeting. He stated that the negotiators had agreed on key terms based on the Board's direction that maximum additional Corporation assistance be limited to $500 million. He said that Corporation assistance to the Project will consist of a combination of loan and price guarantees which will permit Union to continue its attempt to fix the spent shale cooler and which will provide incentives for incorporation of the FBC technology.

Mr. MacAvoy asked the staff whether they agreed with Congressman Synar of Oklahoma, who had asserted in a Washington Post editorial that morning that the Parachute Creek Project has a high level of technical uncertainty. Mr. Keegan said that he would not personally agree with the statement. Mr. Axelrod stated that there is a degree of risk in all the projects before the Corporation and that the Corporation exists to share the technical and financial risks involved in first-of-a-kind commercial-scale synthetic fuels projects with the private sector. The Corporation's engineering staff has taken into consideration the fact that the fluidized combustion technology has a background in pilot tests with shale and in industrial use in the conventional energy industry. Mr. Reichl stated that the technical risk is now lower than when the Parachute Creek Phase I agreement was signed. Mr. Axelrod agreed, noting that initial problems with the retort have been resolved. Mr. Axelrod and Mr. Keegan assured Mr. Corcoran that none of the supplementary assistance under negotiation would be spent on the present seal leg cooling system.

Closing the Meeting

On a motion duly made by Mr. Corcoran and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the portion of this meeting consisting of Agenda Item X be, and it hereby is, closed to public observation, it having been determined by the Board of Directors in open session that the portion of the Board's deliberations concerning the negotiation status of the Union Oil Parachute Creek Project should properly be considered in closed session pursuant to Section 116(f)(1) of the Energy Security Act.

The open session of the meeting was adjourned at 11:25 a.m.

Public Version, Approved by the
Board of Directors, 10/16/85

Closed Portion of the Meeting

That portion of the September 24, 1985 meeting of the Board of Directors of the United States Synthetic Fuels Corporation, closed pursuant to a motion duly made, seconded, and unanimously adopted in open session, was called to order at 11:45 p.m. by Chairman Edward E. Noble in room 403, 2121 K Street, N.W., Washington, D.C. In addition to the Chairman, the following members of the Board of Directors of the Corporation, constituting a quorum of the Board, were present:

Thomas J. Corcoran
Paul W. MacAvoy
Eric H. Reichl
Victor A. Schroeder

The following officers and employees of the Corporation were also present:

Leonard C. Axelrod, Vice President-Technology & Engineering
Ralph L. Bayrer, Vice President-Projects
Charles A. Cowan, Jr., Senior Vice President-Projects
Robert Fairman, Vice President-Administration
James F. Groelinger, Vice President-Finance & Treasurer
S. Kenric Lessey, Jr., Inspector General
Russell F. Miller, Deputy Inspector General
Leonard Rawicz, Vice President, General Counsel & Secretary
Michael J. Bayer, Counsel to the Vice Chairman
Frank R. Hill, Director-Finance
Richard Keegan, Project Officer
Jeanine L. Matte, Assistant General Counsel-Project Finance
    (Negotiation and Documentation)
Betty A. Nolan, Executive Assistant to the Chairman
Kathryn L. Peyton, Assistant to the Secretary
Philipp von Turk, Assistant General Counsel-Project Finance
    (Contract Administration)

Status of Parachute Creek Program Negotiations

Mr. Groelinger reported that the negotiators had agreed on the maximum additional Corporation assistance to the Project of $500 million, which will be dedicated to support construction of an FBC and production from the facility using the FBC (the "Augmentation Program"). Union may draw down guaranteed debt up to a principal amount of $300 million, with an interest allowance of $27 million. The $300 million figure represents 55 percent of the eligible costs of the Augmentation Program, which are estimated to be $550 million. Mr. Groelinger reminded the Board that Union had been contemplating guaranteed debt of up to $350 million prior to the September 10 Board meeting, but later had decided that they were uncomfortable with such a high amount of leverage.

(Ms. Karen B. Hutchison, Director-Media Relations, joined the meeting.)

In response to Mr. Reichl, Mr. Groelinger said that Union might choose to terminate the agreement if the U.S. experienced a dramatic drop in oil prices.

In response to Mr. Corcoran, Mr. Axelrod stated that the design for incorporation of the FBC was still in the conceptual stage. Because of that fact, Union has agreed to reporting procedures which are much more open than those required for Phase I, to keep the Corporation apprised as the design is refined. Mr. Groelinger added that, unlike other Projects in which guaranteed debt is available at closing, Union would not have access to the $300 million guaranteed loan described above until the Project reaches the Development Milestone for the Augmentation Program, i.e, the date when Union would complete the process development phase and the Level II Construction Cost estimate. The staff anticipates that the Project will reach the Development Milestone by December 31, 1986. Mr. Reichl stated that when Union was contemplating installation of an FBC under the $2.7 billion Phase II agreement, they had to develop a relatively detailed design in order to decide whether such an installation was feasible. Mr. Corcoran asked what termination rights the Corporation would have before the Project reached the Development Milestone. Mr. Groelinger replied that, because the Corporation is not at risk, it has no termination rights during that period; however, the Corporation may terminate if the Project does not reach the Development Milestone by June 30, 1987. Mr. Keegan noted further that Union will forfeit rights to any of the $500 million in supplemental assistance if they decide not to proceed with the FBC.

In response to Mr. MacAvoy, Mr. Groelinger stated that the Phase I Guarantee Price escalated to today's date was $46.58/bbl. If Union were to produce eligible product following incorporation of the FBC, they would receive a supplement of $30.00/bbl. Mr. Reichl said he was amazed that Union was willing to accept a price guarantee of $46.58/bbl after investing $750 million.

Mr. Reichl asked what would happen if the retort itself failed. Mr. Groelinger replied that if the ongoing repair work on the seal leg of the spent shale cooler failed (making it impossible to test the retort itself) and if the negotiated termination points were not reached, Union would proceed with the FBC installation. If the FBC installation did not work, for whatever reason, Union would lose its entire investment, and the Corporation would lose the amount of guaranteed debt drawn down. Mr. Axelrod stated that the base case for figuring the Project's economics used a production forecast of 8,000 barrels per day, partially because the retort had never been run above that level. Mr. Reichl said that he would be surprised and upset if Union did not manage to make the facility work at all prior to incorporation of the FBC.

Mr. MacAvoy asked the staff to take the $46.58 price and the $30 supplement, escalate them to 1990 and subtract the Corporation's 1990 price forecast. Mr. Groelinger agreed to supply that number expressed in 1985 dollars to show more clearly in today's terms the amount of price support.

Mr. Groelinger began to review the Term Sheet for the Project, entitled "Union Shale Oil Project Term Sheet with Respect to Amendment to Existing Contract." He stated that Union would not be eligible for price guarantee assistance from the $500 million supplement as long as they were drawing down guaranteed debt. The "cut-off date" for guarantee loan drawdowns is the earlier of (1) commencement of commercial production; (2) December 31, 1990; or, (3) any date chosen by Union after production of the first barrel of eligible product following installation of the FBC. "Commencement of commercial production" is defined as the date upon which the Project reaches an average production rate of 6,000 barrels per day during any 30-day period.

(Mr. Ralph C. Blackwell, Director-Negotiations, joined the meeting.)

Mr. MacAvoy requested the staff to prepare a diagram showing the various increments of Corporation assistance available and to analyze the probability with which each increment will be used.

Mr. MacAvoy asked what was the maximum amount of assistance available to the Project. Mr. Noble responded that, if the seal leg fix does not work, the $400 million from Phase I could be made available, in the form of price guarantees, to support production from the FBC in addition to the the supplement of $500 million now under negotiation. Mr. MacAvoy noted however, that if the Project is a total failure, the Corporation's maximum liability is $327 million ($300 million in guaranteed principle, plus up to $27 million interest allowance). Only if the Project is a technical success and oil prices remain low will all $900 million be used. In addition, Mr.. MacAvoy noted that the maximum payout of price guarantee assistance has a very low present value because it will not be paid until the 1990's. Mr. Groelinger stated that Union has calculated the present value of $900 million in price guarantee assistance under their base case to be $635 million. Mr. MacAvoy said he considered that to be the best estimate of the Corporation's maximum outlay. Mr. Groelinger noted that Union's base case assumes a production rate of 8,000 barrels per day. If the Project actually were to operate at the design rate of 10,000 barrels per day, the present value of price guarantee assistance would be higher because the funds would be used more quickly. (Ms. Matte left the meeting.)

Mr. Groelinger stated that Union would still be eligible for price guarantees from the $400 million awarded in the Phase I contract if they terminate the FBC installation in accordance with negotiated termination requirements, assuming they achieve production from the fix of the Phase I technology. In response to Mr. Schroeder, Mr. Groelinger stated that the time limit on that assistance would be ten years, beginning the day the first price guarantee is paid. Mr. Reichl said that the possibility of production from the Phase I technology without installation of the FBC was a conceivable scenario. (Ms. Matte returned to the meeting.)

Mr. Groelinger stated that if Union does not achieve production from the seal leg fix, then their initial price guarantee allotment following termination of drawdowns from the guaranteed debt would be $573 million ($400 million from the Phase I agreement, and $173 million from the $500 million supplement less the maximum amount of guaranteed debt and the interest allowance). To the extent Union does not draw down the full $300 million guaranteed debt and to the extent that debt is repaid, the price guarantee allotment will grow, to a maximum of $900 million. The maximum outlay of price guarantees would occur when the guaranteed loan is retired.

Mr. Groelinger described the profit sharing provisions of the Term Sheet. The profit sharing period runs for 16 years. The Project's lifetime is projected to be 30 years. Mr. Corcoran asked why the profit sharing period would not run longer. Mr. Groelinger replied that the staff wished to provide Union with a maximum incentive to run the Project as long as possible at the highest possible rate. A longer profit sharing period would not constitute such an incentive. In response to Mr. Corcoran, Mr. Hill said that the ceiling on profit sharing was the nominal amount, the real ($1985) equivalent of which was equal to the real ($1985) equivalent of the $900 million of price guarantee payments. Mr. Corcoran asked if it were always the Corporation's policy to limit its profit sharing entitlement to its investment. Mr. Hill said the Corporation had no such policy, but had tried in this instance to follow as closely as possible the terms included in the original Phase II agreement.

Mr. Groelinger described the five periods of the Termination Provisions included in the Term Sheet. In the first period, between closing and the Development Milestone, Union would be allowed to terminate if they reasonably determine that the estimated construction costs will exceed $286 million. "Construction costs" are the costs (in $ 1985) for design, engineering and construction of the Augmentation Program facilities. Construction costs, as defined for this purpose, do not include "stand-by" costs which Union would incur during the six month operating hiatus while the FBC is installed, interest during construction and certain other eligible costs. Mr. Schroeder referred to the third period of the Termination Provision and asked what the cumulative after-tax cash flow figure of $150 million ($mid-1985) would be in nominal dollars. Mr. Groelinger said he would provide that figure to Mr. Schroeder. (Ms. Matte and Mr. Cowan left the meeting.) Mr. Hill stated that he thought the CATCF figure in nominal dollars was approximately $300 million. Mr. Schroeder recalled a provision in the Phase I agreement which permitted renegotiation of the Project after ten years. Mr. von Turk stated that it is present practice of the Corporation not to include such a provision for projects in which the price guarantee period runs for ten years or less.

Mr. Groelinger stated that Union will make a representation that the Project is viable, according to their base case projections, during the price guarantee period and through the year 2000, assuming economic and operating factors consistent with the base case. Mr. Groelinger added that Union's base case oil price projection is a flat real price ad infinitum.

Mr. Groelinger stated that the Corporation has assigned a value of $83 million to existing facilities for the purpose of computing Union's rate of return.

Mr. Groelinger noted that 60 percent of any price guarantee payments Union receives from the $500 million supplement must be used to pay down the outstanding balance of the guaranteed loan.

Mr. Noble congratulated the negotiating team for their hard work on a tough negotiation. Mr. Groelinger noted that if the Board approved the key terms at the meeting, those terms would be presented to the Board of Directors of UNOCAL, the parent company of Union Oil, on September 30, 1985.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Reichl, it was unanimously

> RESOLVED, that the "Term Sheet With Respect to Amendment To Existing Contract" for the Union Oil Company Parachute Creek Oil Shale Program in the form presented to this meeting, as modified at this meeting, be, and it hereby is, approved; and further
>
> RESOLVED, that the Chairman direct staff to complete negotiation of terms and conditions and preparation of all documentation required for the Board to make all necessary findings and determinations under the Energy Security Act for the Board to authorize, on or before October 16, 1985, an award of Corporation assistance to the project.

The closed session of the meeting was adjourned at 12:55 p.m.

Open Session

The meeting was reconvened in open session at 2:11 p.m. in room 503 of the Corporation's offices. In addition to Chairman Noble, the following members of the Board of Directors, constituting a quorum of the Board, were present:

Thomas J. Corcoran
Eric H. Reichl
Victor A. Schroeder

Report on Seep Ridge Project

Mr. Noble asked the staff to give the Board a briefing on a situation which had arisen concerning the Seep Ridge Project. Mr. Theodore Atwood, Project Officer, noted that the Board received near-final drafts of four closing documents at the September 10, 1985 meeting, including a Due Diligence Report. Mr. Atwood stated that the Due Diligence Report reflected a great deal of background research to verify the claims and representations made by the sponsor and to protect the Corporation's interests. The sponsors are also required to carry out their own due diligence efforts. Through this due diligence process, a very recent ruling of the Court of Appeals for the Tenth Circuit affecting the land on which the Project is located came to light. That decision was filed on September 17, 1985.

Mr. Chester R. Shields, Senior Attorney-Projects, stated that, in 1975, the Ute Tribe adopted a law and order code that purported to cover the entire Ute Indian reservation as it existed in 1882. This assertion of jurisdiction by the Tribe was challenged by two counties, two towns and the State of Utah, all of which claimed that the original Ute Reservation had been diminished by subsequent Acts of Congress. In 1981, the United States District Court, District of Utah, ruled that the section of the original Ute reservation on which the Seep Ridge Project is located had been disestablished by an Act of Congress in 1897, and that Ute jurisdiction did not extend to disestablished lands. In 1983, a three-judge panel of the Tenth Circuit Court of Appeals upheld the District Court's ruling. Very recently, the Tenth Circuit en banc reversed the panel decision in light of a 1984 U.S. Supreme Court opinion concerning disestablishment of reservation lands. According to the Tenth Circuit the intent of Congress to disestablish the reservation was not adequately demonstrated in the 1897 Act and therefore the land remained a part of the Ute reservation and was subject to Ute tribal jurisdiction.

Mr. Shields stated that the Tenth Circuit ruling contains some imprecise language which raises title questions, in addition to the jurisdictional questions, about the Seep Ridge site. When the Bureau of Land Management opened up disestablished sections of reservations to non-Indians in the nineteenth century, it reserved certain parcels of land, known as "school sections," to the State of Utah in order to provide revenue from those lands for public education. Seep Ridge is located on two of these school sections. Because the enabling legislation did not permit the establishment of school sections on reservation lands, the Corporation and the Project must explore whether the fact that the land is now considered to be part of a reservation has any effect on the State of Utah's title to the land or on the State's right to lease the property to the Project. The Corporation has retained Utah counsel to advise the Corporation on this issue and on the question of Ute jurisdiction, which may be more important. That question is what jurisdiction the Ute tribe may now have over the land and activities on it. The initial indication from Utah counsel who are familiar with the case is that the Utes may exercise some control over land use, water rights and taxation. Mr. Shields noted that several Supreme Court cases place restrictions on the tribe's ability to apply their rules and regulations to non-Indians or land not owned by Indians.

Mr. Noble asked if the Seep Ridge Project location was a small part of the land affected by the Circuit Court ruling. Mr. Shields replied that the area of the reservation is roughly 3,000 square miles. The Project's total area is about one-sixteenth of one square mile. Mr. Reichl asked if the staff were aware of any direct opposition to the Project from the Utes. Mr. Shields said they were not.

Mr. Corcoran questioned why these problems had surfaced so late in the negotiations. Mr. Shields replied that the Tenth Circuit's en banc reversal of the panel decision had been totally unexpected by Seep Ridge counsel and by the Ute Tribe. Mr. Corcoran asked if the Project had made any representations with respect to their title to the land. Mr. Shields replied that the sponsors do not make any representations until the closing documents are signed; on that date, the sponsors will represent that they have a validly existing lease, that they have a right to enjoy unfettered use and possession of the land and that they are aware of "no adverse proceedings." Mr. Shields thought that the sponsors would have had no reason to think that they could not make such representations prior to the Tenth Circuit's en banc decision. Mr. Corcoran asked if the sponsors had not alerted the Corporation to this issue because their attorneys felt there was no prospect of an adverse decision. Mr. Shields said he did not know, but would not be surprised were that the case. Mr. Corcoran asked what jurisdictional rights the Utes might have. Mr. Shields advised the Board to wait for the result of the Utah counsel's investigation. Their initial opinion was that the Utes might have some control over taxation, royalties, control of water and land use. Mr. Shields noted that a 1980 Supreme Court case had limited a Montana tribe's right to control activities by non-Indians on reservations. Mr. Shields thought that Ute jurisdiction might be limited by the Supreme Court findings in that case.

Mr. Schroeder asked why the Corporation was taking such an activist role in the proceedings. He stated that the matter should be resolved by the sponsor. Mr. Shields stated that he may have inadvertently given Mr. Schroeder an impression that the Corporation is actively participating in the discussions on the issue. In reality, the Corporation is not taking an active role. Mr. Atwood stated that the Corporation staff wanted to remain well-informed on the matter. He said the sponsor would have to decide whether to continue the Project given the prospect of future obligations to the Ute tribe.

Tar Sands Solicitation

Mr. Bayrer reported that the staff's evaluations of Preliminary Qualification Statements submitted under the Tar Sands Solicitation were in process and the staff expects to present the results to the Board at their October meeting. He noted that this solicitation requires prospective sponsors to have a 100 percent equity commitment 60 days after the Board's determination of eligibility rather than before Board determination has been required in previous solicitations.

Eastern Coal Solicitation

Mr. Bayrer stated that ten projects applied under the Eastern Coal Solicitation in three technical categories: fixed-bed, fluid-bed and entrained-flow. The Corporation received a request from Wentworth Bros. Inc., a sponsor of the Ohio-1 Project, requesting that the Board extend the deadline for submission of the Qualification Proposal from September 9 until November 12, in order to allow them to complete some sample analyses. Mr. Bayrer said the Board could choose to disqualify Ohio-1 or grant the extension, but should consider the effect of an extension on Ohio-1's competitors, Keystone and COGA-1. In response to Mr. Schroeder, Mr. Bayrer stated that an extension would not affect the due date for submission of a Project Proposal, which had not yet been determined by the Chairman. The staff has recommended to the Chairman that the deadline for submission of Project Proposals for the fluid-bed and entrained-flow projects be set for March 14, 1986 and the deadline for fixed-bed projects be set for November 14, 1986. Mr. Reichl stated that he was impressed with the technology being used by the Ohio-1 Project. Mr. Noble stated that he saw no reason why the Board should not extend the deadline.

On a motion duly made by Mr. Reichl and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the request by Wentworth Brothers, Incorporated, sponsor of the Ohio-I Project, for an extension of time to November 12, 1985 to submit a completed Qualification Proposal under the Solicitation for Eastern Province or Eastern Region of the Interior Province Bituminous Coal Gasification Projects, be, and it hereby is, approved, provided that review, evaluation and selection of projects under the category for projects using fluidized bed gasification technology under such Solicitation shall not be delayed or otherwise affected by the action, even if the Project is thereby disadvantaged in competition under the Solicitation.

The meeting was adjourned at 3:06 p.m.

Secretary

MINUTES
of the
MEETING
of the
BOARD OF DIRECTORS
of the
UNITED STATES SYNTHETIC FUELS CORPORATION

October 16, 1985

The meeting was convened at 9:56 a.m., October 16, 1985, in Room 503, 2121 K Street, N.W., Washington, D.C., pursuant to the call of the Chairman and after public notice of the meeting as required by Section 116(f) of the Energy Security Act (42 U.S.C. 8712(f)(1)(1983 Supp.)), published in the Federal Register on October 11, 1985. A quorum of the Board being present, Edward E. Noble, Chairman of the Board of Directors, called the meeting to order and presided. In addition to the Chairman, the following members of the Board were present:

Thomas J. Corcoran
Paul W. MacAvoy
Eric H. Reichl
Victor A. Schroeder

Leonard Rawicz, Vice President, General Counsel and Secretary, acted as Secretary of the meeting.

Chairman's Opening Remarks

The full text of the Chairman's opening remarks, as presented to the meeting, is affixed to these minutes as Attachment A.

Approval of the Minutes

On a motion duly made by Mr. Corcoran and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the minutes of the meeting of the Board of Directors held on September 10, 1985 be, and they hereby are, approved.

On a motion duly made by Mr. Corcoran and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that it is the judgment of the Board of Directors that those parts of the minutes of the closed portion of the meeting of the Board of Directors held on September 10, 1985 deleted from said minutes relating to the Board's deliberations respecting the Union Oil Company Parachute Creek Project may properly be withheld from public disclosure pursuant to the provisions of subsection 116(f)(1)(C) of the Energy Security Act.

On a motion duly made by Mr. Corcoran and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the minutes of the meeting of the Board of Directors held on September 24, 1985 be, and they hereby are, approved.

On a motion duly made by Mr. Schroeder and seconded by Mr. Corcoran, it was unanimously

> RESOLVED, that it is the judgment of the Board of Directors that the minutes of the closed portion of the meeting of the Board of Directors held on September 24, 1985 may be released in their entirety.

Review of the Union Oil Parachute Creek Project

Mr. Richard Keegan, Project Officer, summarized the Board's September 24, 1985 discussion of the proposed Amendment Agreement (the "Agreement") which would amend the Union Oil Parachute Creek Project Phase I contract between Union Oil Company of California ("Union") and the Department of Energy ("DOE") that was transferred to the Corporation in 1982. He stated that the Agreement would increase the Corporation's maximum liability by $500 million; in order to receive the maximum level of assistance, Union would be required to undertake an Augmentation Program to incorporate a fluidized-bed combustor into the Phase I facility, and to produce synthetic crude oil from shale using the Unishale "C" Process. Corporation assistance would be provided in the form of a combination of loan and price guarantees.

Mr. Keegan stated that the staff had completed the documentation requested by the Board at the September 24, 1985 meeting, including a Staff Findings Report and Due Diligence Report as well as the Agreement itself, and had received Union's final Information Memorandum on October 14, 1985. The Agreement was completed in accordance with the terms set by the Board on September 24, although the negotiators had extended the time period and expanded the volumetric limitations of the purchase arrangements between the Department of Defense ("DOD") and Union in order to preserve the intention of the parties as expressed in the Phase I contract, such modifications being consistent with DOD requests. In response to Mr. Corcoran, Mr. Keegan stated that DOD had received a copy of the Agreement and had expressed no objections.

Review of the Information Memorandum Submitted by Union Oil

Mr. Corcoran noted that the original Phase I contract was negotiated between Union Oil Company of California, a subsidiary of UNOCAL Corporation, and DOE. He noted further DOE's recent concern over the technology involved in the Parachute Creek Project, and asked if DOE had communicated its concerns or had participated in technical discussions with the Corporation and the sponsor since construction of the Phase I Project had been completed in September 1983. Mr. Leonard Axelrod, Vice President-Technology and Engineering, replied that DOE had briefed the Corporation on the Project in

1981, but there had been very little discussion since that time. Mr. Noble asked if DOE had discussed with Corporation staff the technological inadequacies alleged in a recent Letter to the Editor of the Wall Street Journal. Mr. Axelrod replied that he and Mr. Noble had discussed the Project with the Secretary of Energy and a staff assistant, but that the Secretary had apparently disregarded the information which they had provided.

Mr. Corcoran referred to Paragraph 1.2.3 on page 4 of the Information Memorandum, which stated "The efficiency improvement of Unishale 'C' over Unishale 'B' (70.7% vs. 62.7%) manifests itself in reduced consumption of natural gas and power." He asked what the savings would be over the life of the Project resulting from the efficiency improvements of Unishale "C." Mr. Axelrod stated that he estimated the savings to be approximately $5 to $6 per barrel, based on current prices of electricity and natural gas. Mr. Schroeder noted that, when the original contract was signed, Union anticipated a savings of only $2.75 per barrel resulting from incorporation of the "C" technology. Mr. Axelrod stated that the discrepancy arose from space limitations at the Parachute Creek site, which resulted in elimination of certain equipment and which limited the savings to be realized there; however, work is being incorporated at Parachute Creek which will result in design information for larger savings for other plants. Mr. Corcoran referred to a statement regarding Union's financial strength on page 7, which read "UNOCAL may be able to pay the interest on its debt [in part resulting from the 1985 unsuccessful takeover attempt by Mesa Affiliates] out of company cash flow." Mr. Corcoran asked the staff to assess Union's capability to make those payments. Mr. Groelinger replied that the staff had discussed that matter extensively with Union, particularly in two major areas: Union's ability to fund the additional required investment prior to the Development Milestone and to take advantage of all available tax benefits. Mr. Groelinger explained that the Development Milestone is the date by which Union must bring its capital cost estimates to a Level II design level, December 31, 1986 at the latest. To that point, the entire effort of the Augmentation Program will be funded by Union.

Mr. MacAvoy asked Mr. Groelinger to describe the disbursement schedule for the guaranteed debt. Mr. Groelinger replied that from the Date of closing on the Agreement until the Development Milestone date, the Project will be funded by Union. After that date, proceeds from the guaranteed debt will become available. The specifics of the guaranteed debt are to be arranged by Union, but the Corporation has set the maximum level of principal to be guaranteed at $300 million. Disbursements would be available until the earlier of: (1) the Project Commercial Production Date (the date when the Project produces an average of 6,000 barrels per day of crude shale oil during a 30-day period); (2) December 31, 1990; or, (3) any date selected by Union after the first sale of Eligible Product produced by the Project (the "Cutoff Date"). Mr. Groelinger emphasized that the loan guarantee involves private sector funds under a Corporation guarantee. No Corporation funds would flow to the Project directly until the Project produces Eligible Product, probably in mid-1989, unless there were a default on the loan or a premature termination. Mr. MacAvoy asked what events could trigger a premature termination. Mr. Groelinger replied that the contract embodies a series of five stages for permitted termination tests, listed on page 17 of the staff's Findings Report, which have been structured to recognize the proper development of the Project and prudent decision-making criteria for such a project. Union management may decide to terminate the Project if they can reasonably and in good faith estimate:

(a) between Closing and the Development Milestone Date, (i) that the estimated Construction Cost will exceed $286 million, or (ii) that Union's Real Rate of Return will be less than 18 percent;

(b) between the Development Milestone Date and the Construction Milestone Date, (i) that the estimated Construction Cost will exceed the greater of (x) $286 million or (y) 105 percent of the estimated Construction Cost as of the Development Milestone date, or (ii) that Union's Real Rate of Return will be less than the lower of (x) 16 percent or (y) 95 percent of Union's Real Rate of Return projected at the Development Milestone Date.;

(c) between the Construction Milestone Date and the Cutoff Date, (i) that the estimated Construction Cost will exceed the greater of (x) $286 million or (y) 105 percent of the estimated Construction Cost as of the Development Milestone Date, or (ii) that the maximum projected Cumulative After-Tax Cash Flow (expressed in mid-1985 dollars) will at no time prior to December 31, 1998 exceed $150 million;

(d) between the Cutoff Date and the end of the Price Guarantee Period, (i) that the Project is unlikely to provide positive After Tax Cash Flow in the aggregate over a period of 8 quarters, and (ii) that the net present value of After Tax Cash Flows projected to be generated for the remaining life of the Project, when discounted to the time of determination at a rate of 10 percent, is less than zero;

(e) after the end of the Price Guarantee Period, that continuation of the Project would not be a prudent business decision.

Mr. Groelinger stated that, with respect to stage (a) above, Union has estimated its Construction Cost (the cost, in September 1985 dollars, for design, engineering and construction of the Augmentation Facilities) to be $260 million. The estimated Construction Cost would have to exceed $260 million by more than 10 percent before Union would be allowed to terminate. In response to Mr. MacAvoy, Mr. Groelinger stated that none of the debt would be drawn down during stage (a) because Union has no right to guaranteed debt during that period. Mr. MacAvoy stated that it was important to emphasize that, during the stage in which Union would be most likely to terminate, i.e., stage (a), Union would have received no Corporation assistance. Because stage (a) ends at the Development Milestone, which would occur no later than December 31, 1986, the Agreement would not expose the federal government to additional deficits during fiscal year 1986. Mr. MacAvoy suggested that the staff analyze the potential budgetary impact of termination during the other termination stages.

Mr. Corcoran noted the condition in stage (b) above which allowed Union to terminate if Union's Real Rate of Return were less than 16 percent. Mr. Corcoran asked what comparable rate of return DOE uses in its project negotiations with projects such as the alcohol fuels plant in Louisiana which recently received an award of DOE assistance. Mr. Rawicz stated that DOE does not use a real rate of return in calculating project returns. For example, DOE does not customarily take tax benefits into account. Mr. Rawicz stated his opinion that DOE uses no measurement comparable to the Corporation's measurement of the Real Rate of Return of projects. Mr. Reichl noted that the Louisiana project received a tax subsidy equivalent to $120 per barrel of synthetic fuel, a figure in excess of the cost of production. He said he was not sure whether that $120 included a calculation of rate of return. Mr. Corcoran asked what technological breakthrough was being incorporated into the DOE project in order to justify the high level of assistance. Mr. Reichl stated that the project had claimed no technological breakthrough and, to his knowledge, the project was not intended to exploit any advanced procedures for converting grain into alcohol. Mr. Rawicz noted that the DOE solicitation under which the award was made did not call for any new technology; instead, the solicitation required recipients to show a high probability of commercial success and likelihood of becoming operational in the shortest time frame.

Mr. MacAvoy asked Mr. Groelinger to clarify the projected dates when the Parachute Creek Project would reach the Development Milestone date and the Construction Milestone date, and to explain what part of the loan guarantee would be at risk on those two dates. Mr. Groelinger replied that the Project will reach the Development Milestone date no later than December 31, 1986, and no portion of the guaranteed loan would be at risk on that date. The Construction Milestone date is the date on which Union would have incurred or would become liable for at least 25 percent of the total Augmentation Facilities construction cost, to be reached no later than December 31, 1987. During calendar year 1987, up to 25 percent of guaranteed debt ($75 million) may be expended, a figure equivalent to 55 percent of the total funds expended at that point. The remainder of the funds will come from additional equity investments made by Union. Mr. MacAvoy noted that, in fiscal years 1987-88, no government outlays would be made unless the termination provisions were triggered, in which case the maximum government exposure would be $75 million, not the $900 million figure quoted by the Corporation's critics. Mr. Schroeder noted that the staff had originally set the debt/equity ratio at 70/30, rather than the 55/45 ratio quoted by Mr. Groelinger. Mr. Groelinger replied that UNOCAL has traditionally been "debt averse," and management had decided to increase the equity share to 45 percent after the Corporation's September 10, 1985 meeting.

Mr. MacAvoy again referred to the termination provisions in the contract and requested a review of the Corporation's potential exposure in stages (c), (d) and (e). Mr. Groelinger replied that the negotiators have agreed on a "Cutoff Date" in mid-1989, after which Union no longer would be able to draw down on the guaranteed debt. At that point, production from the Augmentation Facilities would begin and Union would be eligible for the additional price guarantees awarded under the Amendment Agreement, up to $500 million. Prior to the "Cutoff Date," any production from the facility could be eligible for price guarantees under terms similar to the Phase I contract, with a maximum limit of $400 million.

Price guarantee assistance from the Agreement would be available for a total of 10 years. It is conceivable that Union may fix the faulty spent shale removal system, which has prevented Union from receiving price guarantee assistance under the Phase I contract, as early as mid-1986. In that case the 10-year term for price guarantee assistance could begin in 1986, although Union would not be eligible for assistance from the additional $500 million awarded by the Amendment Agreement until they achieve production from the Augmentation Facilities, probably in mid-1989.

In response to Mr. MacAvoy, Mr. Groelinger stated that the net present value of the Corporation's maximum exposure if the Project defaulted on the total amount of available guaranteed debt would be approximately $155 million, including the tax effects of such a default. Mr. Groelinger stated that if an expected value analysis were performed considering the probability of a default or a termination at each stage included in the termination provisions, the expected value of the Corporation's exposure would be much smaller than $155 million (September 1985 dollars). The greatest Corporation outlays would occur if the Project operated successfully and the Corporation disbursed the maximum amount of price guarantee assistance. Mr. MacAvoy stated that the Corporation's critics have discounted that probability to zero. He stated his opinion that if the Project were to fail and Union were to terminate, the net present value of the Corporation's exposure would likely be less than $100 million. He thought that it was highly unlikely that Union would proceed all the way to stage (e) in the termination provisions and then terminate, because they would probably know the Project was not going to work long before that point. Mr. Groelinger stated that the Board should consider the fact that Union might not terminate even if they could contractually do so; their past performance has led him to believe that they would not abandon the Project without a valiant effort to make it work. Mr. Reichl noted that it was conceivable that the Project would operate, but not at the design rate. Mr. Groelinger stated that the Corporation median case and the Union base case assume an operating rate of 77 percent of design rate. Mr. Axelrod noted that the retort has run very close to that rate. Mr. MacAvoy stated that, if the Project operates at the 77 percent rate, the government's exposure would be much lower than the maximum exposure in the better case scenarios, and in return the nation would learn a great deal about the technology.

Mr. Corcoran referred to page 10 of the Information Memorandum, and to a sentence in section 1.4.2 which stated "Development of this resource [oil shale] could reduce our country's dependence on imported oil and in an emergency, it could become a key factor in fueling our military machines." Mr. Corcoran asked how much shale oil product has been tested by DOD. Mr. Axelrod replied that DOD has tested product from shale pilot plants such as the Department of the Interior project at Rifle, Colorado, and the Paraho and Geokinetics projects. Mr. Corcoran asked if the product differs from the various plants, or if the tests of product from one plant would be applicable to product from other shale oil plants. Mr. Axelrod replied that there are some minor differences which are usually removed in the refining process; the test runs already conducted are useful in anticipating the performance of product from Parachute Creek.

Mr. Corcoran turned to page 12 and noted the following paragraph:

> UNOCAL reasonably believes that the Phase I Augmentation Facilities will be constructed and operated in compliance with all applicable federal and state laws and regulations. No regulatory problems have as yet arisen nor are any anticipated by UNOCAL wherein program implementation will be curtailed or impaired in any material respect as a result of noncompliance.

He asked what time period Union was referencing in the statement that "no regulatory problems have as yet arisen...." Mr. Axelrod stated his belief that the sponsor was representing that they anticipate no problems in obtaining permits; although there have been some accidental emissions at the Project, these problems have been resolved and they have not caused the Project to be curtailed by permitting authorities. Mr. Corcoran remarked that, when the emissions occurred, the Project was operating under the DOE Phase I contract, and it was difficult for government officials to gain access to the site. He asked if this problem had been addressed by the staff during negotiation of the Agreement. Mr. Philipp von Turk, Assistant General Counsel-Project Finance (Contract Administration), stated that the negotiators had made extensive revisions to that portion of the Agreement and that such revisions represent a significant change from the DOE Phase I contract. Mr. Corcoran stated his surprise that the staff had found it necessary to modify the DOE contract, as he had presumed it to be a "model contract." He asked if the reporting requirements had also been modified. Mr. von Turk said the reporting requirements had also been discussed at considerable length, and changes were made to reflect the Corporation's experience. Mr. Groelinger said that almost 10 percent of the Agreement consists of a separate section on reporting requirements. Mr. Axelrod noted that Union had been very cooperative in the negotiations on that portion of the Agreement.

Mr. Schroeder asked how the Environmental Monitoring Plan (EMP) Outline had addressed the proposed spent-shale disposal system. Mr. Axelrod replied that the carbon content, size and consistency of the spent shale would be different following the addition of the Augmentation Facilities. Union has done some work concerning these characteristics, and plans to use combusted shale to set up test piles which would be reviewed by the Colorado permitting authorities. Mr. Andrew Lawrence, Director-Environment, added that Union would need to examine its existing permits in light of the data provided by the new test piles. Provisions for such an examination are included in the EMP Outline. The Corporation anticipates that Union will have extensive monitoring requirements pursuant to the revised permits for the spent shale disposal from the new facility. Mr. Corcoran stated that he had been advised that under the DOE Phase I contract, Union was not required to report to the Corporation when the Project experienced the accidental emissions. He stated that the new reporting requirements in the Agreement are very important because the Corporation has changed its mission from achieving production to gaining learning benefits. He said the new Agreement is a substantial improvement over the old contract and he congratulated the negotiating team for following through on the Board's demand that the two weaknesses (reporting requirements and access to the Project site, Project records and Project personnel) be corrected.

Mr. Corcoran asked the staff to consider releasing two drawings contained in the Technology and Engineering chapter which in his opinion demonstrated the Project's attempts to correct the seal leg problem through the addition of the Augmentation Facilities. Mr. Axelrod stated that the release of the drawings would have to be approved by Union, and could be handled through the Corporation's regular public disclosure channels.

On page 9 of the Technology and Engineering chapter, Mr. Corcoran referred to Union's discussion of the frustrating experiences with the retorted-shale cooling system. Union has made over 40 separate attempts to get this system to work which have "provided useful equipment design information." Mr. Corcoran asked why the system has not worked, especially given all the work done by Union prior to the attempted start-up at the pilot-scale level. Mr. Axelrod stated that this was an example of the old engineering problem concerning the difficulty of scaling up technology from the pilot scale to the commercial scale. He stated that some things cannot be extrapolated, and the difficulties in this case involve the effect of geometry on the flow of matter in all three phases--liquids, solids and gases. It is difficult to predict in advance what the reactions will be given the complexity of mixing the three phases. Mr. Reichl stated that this was especially so when solids are involved, because the flow of solids is very unpredictable. He stated that the Board should focus on what has worked at the Project, beginning with the shale mine, which is in itself a complicated exercise. Mr. Corcoran noted that some of the Corporation's critics have stated that only R&D is necessary before scaling up to commercial production. He asked if they could possibly be wrong. Mr. Reichl stated that it is easily possible to scale a project up from the R&D level and then get stuck. Mr. MacAvoy asked how the Augmentation Program will avoid the problems having to do with removal of the solid shale. Mr. Reichl stated that the fluidized-bed combustor would grind the shale up to a "handleable" consistency. He was confident that the Project would work, although he noted that no one has ground hot spent shale at such a large scale. He stated, however, that use of the fluidized burner is well established in the petroleum industry, where it has been used for over 40 years in catalytic cracking. Recently the technology has been incorporated in coal combustion systems and it has been extremely well demonstrated there. Mr. Axelrod stated that he knew of four pilot plants which have combusted spent shale: the Morgantown DOE Research Center, the Chevron pilot plant, the Exxon pilot plant and a plant in Australia. Mr. Reichl also noted that Union itself has extensively tested the feedstock in a pilot facility. Mr. Axelrod stated that Union began development for combusting retorted shale around 1972, and that their vendor, Dorr-Oliver, ran tests from 1978 to 1982, which produced data for the Phase II proposal that Union made in 1983, and which is now incorporated into the Augmentation Proposal.

Mr. Corcoran stated that one of his objectives since he joined the Corporation has been to increase the Corporation's coordination with other government agencies. He said that he had hoped that the Corporation would have a continuing flow of information with DOE. He stated that such a flow of information was particularly important with respect to the fluidized-bed technology under consideration for the Parachute Creek Project. He asked what was the history of interagency coordination on this point. Mr. Axelrod stated that DOE had provided six to eight fairly detailed and lengthy presentations on all their projects, including Parachute Creek, in 1981. At that point, DOE stopped its demonstration program while the Corporation pursued its goal of high production. There was a large gap between the "bench scale" interests of DOE and the Corporation's goal of maximum production as required by the Energy Security Act of 1980. The amount of information passed back and forth declined between 1982 and the present, although Mr. Axelrod said he continues to review the Department of Energy's R&D Outline each year and to make comments on that Outline. The Corporation has continued to have informal exchanges with DOE and, when Corporate staff need information, they call DOE. Mr. Axelrod noted that in the last week or 10 days DOE had been requested internally to prepare a paper on fluidized combustion of shale and had requested the Corporation to comment on some material compiled by a DOE contractor on the subject. The Corporation staff provided some refinements and corrections to the DOE information. Mr. Axelrod stated that, at the request of the Secretary of Energy, Mr. Axelrod had a conversation with one of the Secretary's assistants, in which he updated the assistant on what was happening at various fluidized-bed pilot plants around the country. The DOE assistant had been very surprised at the level of activity in this area, although reports on the technology have been made in the public press and have been included in the DOE news clips. Mr. Corcoran asked if, in discussions with the Department of Energy, the Corporation had referred to Chevron's 350-ton per day turbulent-bed retort facility in Salt Lake; the five-ton per day fluid-bed retort in Bay Town, Texas, involving Exxon; the Lurgi five-ton per day screw mixer retort at Gulf Oil's Hammerville, Pennsylvania, R&D center; and the DOE Morgantown Energy Technology Center work in this area. Mr. Axelrod replied that the Corporation had discussed all of these projects with DOE. Mr. Corcoran expressed surprise that this information had not percolated up to the executive management of the Department of Energy. He noted that DOE has over 12,000 employees, while the Corporation has less than 140, and wondered why the senior management of DOE did not have access to the correct information. Mr. Noble expressed his surprise as well. Mr. Reichl stated that it was a misconception to think that DOE is the ultimate resting place for all information on fluidized-bed technology, because the field is highly competitive and information is widely scattered. Mr. Noble noted that Union will spend more than $300 million in additional funds to prove the technology. Mr. Reichl stated that the main point to remember was that the decision to incorporate the fluidized-bed combustion technology into the Parachute Creek Project was not being made lightly, and the chances of success were very good. Mr. MacAvoy asked if he could conclude that the Board and the senior technical staff disagreed with Secretary Herrington's statement that the fluidized-bed technology is "conceptual." Mr. Reichl stated that no one has yet processed spent shale in a fluidized-bed combuster at commercial scale; however, he considered it to be a very good risk. Mr. Axelrod added that, while the design is presently conceptual, no government money will be expended before the design is brought to Level II.

Mr. Corcoran asked if there were provisions in the proposed Agreement that would allow other projects to use the Union upgrader. Mr. von Turk replied that the Agreement requires Union to make its upgrading facilities available to other projects pending before the Corporation.

Mr. Schroeder asked to what extent fines will be burned in the raw shale fires of the combustor. Mr. Axelrod stated that all the shale fines rejected from the retort feed preparation system would eventually be used. Mr. Schroeder asked what percentage of carbon would be removed. Mr. Axelrod replied that he would get the information for Mr. Schroeder.

Mr. Corcoran noted the following sentence on page 56 of the Technology and Engineering chapter: "The Program demonstrates, at commercial-scale, all the essential subsystems and supporting technologies, including pollution control technology, that must be demonstrated before replication by the private sector can be achieved." Mr. Corcoran noted that such demonstration of commercial scale systems and technologies was very important to the Corporation's Business Plan, and asked if the Parachute Creek Project was at the minimum commercial scale. Mr. Axelrod replied that the Project seems to be at the proper size for a single retort, although the Corporation anticipates that the mine and upgrading modules could be larger.

Mr. MacAvoy noted that the Secretary of Energy had stated publicly that the Project is applicable only to a small portion of United States oil shale resources, and asked if this were true. Mr. Axelrod replied that the Secretary was completely wrong on that point. The Parachute Creek retort can handle most of the rock in the Green River Basin, containing approximately 300 to 400 billion barrels of shale oil. The Union system has trouble only with high grade rock from the Green River Basin, which would usually be mixed with lower grade shale. Mr. Noble stated that the Secretary of Energy was as wrong as he could be on that point.

Mr. Corcoran noted that Union plans to market two by-products of the Project, ammonia and sulfur, through the UNOCAL Chemical Division. He asked what benefits would accrue to the government through sale of the two by-products. Mr. Axelrod replied that any revenues from those sales would be included in the Project's cumulative after-tax cash flow.

(Mr. MacAvoy left the room.)

Mr. Groelinger stated that total Project revenues, including revenues from sale of by-products, will contribute to the Project's cash flow, thereby speeding up the debt repayment in the early years, and perhaps ultimately flowing to the Corporation in the form of profit-sharing payments. Best estimates predict that the value of the ammonia and sulfur will amount to approximately $0.40 per barrel.

Mr. Corcoran referred to a section on page 1 of Chapter 7, "Land and Resource Availability," which discussed the fact that the latest title opinion on the property was issued in 1974. He asked if a title search had been made since that time. Mr. von Turk replied that the staff has made a number of reviews with respect to the title records. He added that, at the closing on the guaranteed debt, a new title opinion would be submitted in connection with the mortgage. Mr. von Turk stated that there was an adequate basis in the various documents to support Union's representation to the effect that their title to the property is free and clear of any encumbrances.

Mr. Corcoran asked if the resource described in section 7.2, "Long Ridge Reserves Estimate," was unique, or if the technology to be used by Union to process the Long Ridge shale was applicable to all western shale. Mr. Axelrod stated that the technology is applicable to all but 10 percent of the U.S. shale reserves. Mr. Reichl noted that the mining processes used by Union are applicable to any other shale retorting technology.

In Chapter 8, "Environmental/Socioeconomic," Mr. Corcoran noted the lengthy section on permits required by various federal, state and local authorities and asked if the staff had itemized what environmental lessons it hoped to learn from the Project. Mr. Axelrod replied that the staff intends to learn how to operate a shale mine, retort and upgrader within the permitted requirements for all effluents. Mr. Lawrence added that the Corporation will learn what needs to be done in order to replicate the technology on environmentally sound principles. Mr. Axelrod stated that, through supplemental monitoring required by the Corporation, in addition to the requirements set by permitting authorities, the Corporation will obtain additional information which will affect the safety and health of plant operators and nearby residents. Mr. Corcoran asked how long the plant would have to operate in order to achieve the maximum environmental learning benefits. Mr. Axelrod replied that the staff would learn something every day, but hoped the plant would run for at least three to five years in a steady state of operation in order to maximize the learning potential. In response to Mr. Corcoran, Mr. Axelrod defined a "steady state of operation" as operation steadily at a high rate for a long period of time. In response to Mr. Corcoran, Mr. Axelrod stated that R&D in this area and in general would be improved and would acquire direction through feedback from commercial operations such as the Parachute Creek Project. Mr. Corcoran asked if R&D should continue during the commercial operation. Mr. Axelrod replied that it should.

Mr. Corcoran asked what potential problems may arise as the plant attempts to operate in accordance with the Clean Water Act, as discussed on page 7 of Chapter 8. Mr. Lawrence replied that Union is seeking an amendment to its permit from the Colorado Department of Health in order to incorporate provisions for emergency overflows from temporary storage ponds #1 and #2 into the existing permit for the shale oil upgrading facility. This is a discretionary area for Union. Union has designed its spent shale pile to be zero discharge, i.e., no runoff will go to any surface body of water. For that to be accomplished, Union must trap all runoff and hold it in a pond, a strategy which requires no National Pollutant Discharge Elimination System (NPDES) permit. It is conceivable that in an incidence of high precipitation, the pond capacity could be exceeded, in which case there would be runoff from the pond. Union is seeking a permit in order to cover such an eventuality. Mr. Corcoran asked if the staff was satisfied that the spent shale pile will be a zero discharge pile.

(Mr. MacAvoy returned to the meeting.)

Mr. Lawrence replied that he was satisfied, absent significant amounts of precipitation. He also noted that the Colorado Department of Health was satisfied in that regard as well.

Mr. Corcoran noted that in a paragraph on page 10, Union described the several sites available for disposal of the processed shale generated by the Parachute Creek facility, and discussed the fact that the currently permitted area in the East Fork Canyon will be sufficient for only about nine years of production. The most promising alternatives to the East Fork Canyon disposal site include the area along the top of Long Ridge and inside the mine itself. Mr. Corcoran asked when a decision would be made about where to store this processed shale after the East Fork facility is full. Mr. Lawrence explained that, as the plant operates, Union will obtain a permit for shale disposal at one of the sites listed in Union's Information Memorandum. The East Fork Valley disposal site will be adequate for eight to nine years and after that an alternative disposal site will be used. While Union is disposing of processed shale in the permitted pile, it will be carrying out investigations to see whether or not it is practical to return the processed spent shale to the mine. Mr. Corcoran asked if the state of Colorado and the Environmental Protection Agency were aware of this potential method of disposal. Mr. Lawrence replied that they were. The primary permitter in this matter is the Colorado Mined Land Reclamation Board (MLRB), which is aware of the limits of the East Fork Canyon disposal site and is also aware that Union is investigating Long Ridge and Old Mountain as potential alternative sites. Mr. Corcoran asked if the MLRB anticipated any problems. Mr. Lawrence replied that the MLRB has raised no objections in principle to use of these alternate sites but is awaiting additional information, particularly on the characterization of the decarbonized shale.

Review of the Staff Findings Report

On page 3 of the Findings Report, Mr. Corcoran noted the staff's reference to "annual sale to DOD of 3.3 million barrels . . . of certain refined products consisting of JP-4 jet fuel and diesel fuels with the military specifications DFM and DF-2." Mr. Corcoran asked what DOD planned to do with the refined products. Mr. Keegan replied that under the Phase I contract DOD had rights to purchase up to 10,000 barrels per day of refined products, including JP-4 jet fuel and two types of diesel fuels. DOD has been exercising that right on a regular basis. DOD also had rights under the Phase I contract to lift raw shale oil and transport it to the refinery of their choice. That portion of the Phase I contract has not been useful. The revised Agreement would extend DOD's right to purchase the refined products described above, which DOD has said would be a useful provision.

Mr. Corcoran noted that page 5 of the Findings Report refers to the operating problems which Union has experienced with the Phase I facility. He asked how the staff assessed the probability that Union will be able to fix the seal leg and operate from the present facility. Mr. Groelinger replied that Union will do a 1986 test using the seal leg fix, but even Union cannot project sustained production from the fix. Mr. Groelinger stated that the staff believes there is a 10 percent likelihood that Union will be able to fix the present facility and achieve sustained operation.

Mr. Reichl noted that the fix of the seal leg is a multi-million dollar effort and Union must believe it will work to a point. Any additional data from the retort if the fix works would be greatly appreciated by the Corporation.

Mr. Corcoran noted the following sentence at the top of page 6: "Phase I entails conventional room-and-pillar mining techniques to be followed by underground crushing and screening of the oil shale to produce 12,800 net tons per stream day of shale feed for the retort." Mr. Reichl stated that the data from the room and pillar process will include important information. The mine to date has run very successfully for brief periods, but mining can bring surprises every day and it is obviously a benefit to get as much experience as possible.

Mr. Corcoran noted that, on page 8 of the Findings Report, the staff listed the following processes which will remain essentially unchanged under the Augmentation Program: the mine, the retort, shale oil deashing, fractionation, light ends condensing, sulfur recovery and make-gas compression, recycle gas heating, and the upgrading plant. Mr. Corcoran asked if the staff expected all of these components to work once the fluidized-bed combustor is installed. Mr. Keegan replied that all of the systems have been working during tests to date. The critical failure point of the Project has been the seal leg cooler; everything else has worked to the limit of the tests. Mr. Axelrod noted that none of the equipment has been operated for a long period of time and that some of the systems required initial fixes. He added that the upgrader has been operated for a longer period than any of the other processes except the mine. Mr. Reichl noted that, other than the mine and the retort, all the systems are conventional systems that exist in other mines. Mr. Corcoran asked if the experience to date had demonstrated that Union's initial fixes on the systems other than the seal leg cooler had been satisfactory. Mr. Axelrod replied that they were, up to the limit to which they had been tested thus far. In response to Mr. Corcoran, Mr. Axelrod stated that he would not be surprised if there were problems with the deashing system after start-up.

On page 13 of the Findings Report, Mr. Corcoran referred to the following sentence: "To accommodate the change in the market price definition to a true Syncrude value, the Guaranteed Price (P_2 under the Contract) will be reduced from $42.50 to $37.87 per barrel." He asked what the guarantee price was under the DOE contract. Mr. Groelinger replied that the original contract called for a price of $42.50 per barrel. The basis of that number is being changed in the Agreement in order to simplify contract administration while preserving the economics at approximately the same level as the original contract. In the first contract, the market price was defined relative not to the value of the syncrude, but relative to the value of the products being purchased by the military. The guaranteed price was also defined in the same way. Because the Corporation is actually interested in syncrude, the negotiators have revised the market and guaranteed price mechanisms to relate to the value of syncrude.
Mr. Groelinger stated that, while the dollar value would remain neutral, the administration of the contract would be improved. The original $42.50 figure was related to market price and covered upgrading costs. The Corporation has removed that undefined element. The earlier contract

contained inherent assumptions which compared the value of the Parachute Creek Project product to the value of crude oil. The negotiators have removed the need for those assumptions. The contract basis will now relate to the actual value of syncrude and the appropriate guaranteed price for that syncrude. Mr. Corcoran said that he thought it looked like a better deal for the Corporation. Mr. Groelinger replied that the negotiators agreed, otherwise they would not have set it up that way.

Mr. Corcoran asked Mr. Groelinger to explain the base case the negotiators had used in defining the details of the profit-sharing provisions. Mr. Groelinger replied that the base case assumed a production level of 77 percent of capacity. At such a low rate of production, the financial performance of the project would be lower than Union's normal criteria. Therefore, the base case does not provide for profit-sharing payments. To the extent the project's financial performance exceeds that which would result from the assumptions of the base case, profit-sharing payments would be made. Mr. Corcoran asked if there were incentives built into the agreement for production at rates above that of the base case. Mr. Groelinger replied that there are strong incentives for Union to produce the maximum possible amount. One such incentive would be to achieve the maximum value of price guarantee payments and pay off the debt earlier. Assuming production of 9,000 barrels per day for an extended period of time, Mr. Groelinger stated that the base case predicts that the net present value of the price guarantee payments followed by debt repayment is $324 million in 1985 dollars. Mr. MacAvoy asked him to add into his calculation the possible stream of profit-sharing. Mr. Groelinger replied that profit-sharing would come at a later date, probably after the year 2000; therefore, the net present value of any profit-sharing would be relatively low, or approximately $11 million.

Mr. Corcoran asked if there were any profit-sharing provisions in the DOE Phase I contract. Mr. von Turk replied that there were no profit-sharing payments in the Phase I contract comparable to the profit-sharing payments negotiated by the Corporation's staff. In the Phase I contract, Union was required to escrow some revenues as a contingency fund in case more price supports were needed later on. The government would not have had access to that money during the escrow period. Mr. Groelinger stated that the escrow account was designed to allow the Project to generate funds for continued operation.

Mr. Corcoran turned to the Project Programmatic Analysis on page 21, and asked how the Parachute Creek Project fits the western shale portion of the Corporation's Business Plan. Mr. Axelrod replied that the Project fits the Business Plan because it uses shale, a major fossil resource; it would process the shale in an above-ground retort; and, it would recover energy from the carbon on the combusted shale. Mr. Corcoran asked if the Corporation's Business Plan had been circulated at DOE. Mr. Ralph Bayrer, Vice President-Projects, stated that he would obtain that information. Mr. Reichl noted that underground mining and surface-retorting of oil shale is the number one technology to be pursued according to the Corporation's Phase I Business Plan.

(Mr. Corcoran left the meeting).

Mr. MacAvoy noted the discussion on page 22 concerning the Project's contribution to the diversity of the Corporation's portfolio, and its potential for replication. He asked if the Project's potential for replication might suggest that the project could in fact make good sense as an investment for a private corporation without government assistance. For example, the licensing revenues from the technology could be high enough to generate revenues to compensate for high per barrel costs of the liquid petroleum product. Mr. Axelrod noted that, in Union's original plan to use the Unishale "C" technology in the Phase II Project with Corporation assistance of $2.7 billion, Union anticipated reducing the cost of operation sufficiently so that the company could proceed to the final phase of the project without any government assistance. He was not sure whether that expectation would still be obtained, given the current economic situation and the new Project economics resulting from the Agreement.

Mr. MacAvoy turned to the discussion of the social cost/benefit analysis of the project on page 39. He asked if the staff had intentionally down-scaled the estimate of the project's net present social value to make it as small as possible. Mr. Groelinger replied that the staff had adopted a very conservative philosophy in order to reflect a conservative and achievable result. Mr. MacAvoy stated that he could upgrade the staff's estimate to a more realistic level.

(Mr. Corcoran returned to the meeting.)

For example, he thought the 10 percent discount rate was inordinately high, because private sector mining projects had been supported with the approval of stockholders when they returned 5 to 7 percent. He asked what Mr. Groelinger's estimate of the net present cost of the project would be, using a 5 percent discount rate rather than the 10 percent rate.
Mr. Groelinger stated that the net present cost of the Project would probably rise to approximately $400 million from the currently projected $324 million (in 1985 dollars), but that the net present value of each follow-on project would be magnified, and would very likely double.
Mr. MacAvoy stated that he would assume the Corporation's very cautious estimate of 200,000 barrels per stream day (BPSD) and would estimate that, given a 5 percent discount rate, the gross gains from the Project would be around $2 billion versus a net present cost of $400 million. Therefore, in the private sector, the Project would be valued at $1.5 billion. In other words, Mr. MacAvoy felt that he could responsibly assert that the value of the Parachute Creek Project appears to be over $1 billion. Furthermore, he stated, if one assumed a barrel per stream day figure of 400,000, the value of the Project would increase to approximately $4 billion. Mr. Corcoran noted that the staff was predicting a second generation of oil shale facilities coming on stream unassisted by the year 2005. Assuming production from the Parachute Creek facility begins in 1990, the Project will be driven by market forces only 15 years after initial production, or half-way through its useful lifetime of 30 years. Mr. Groelinger stated that it is very likely the case that market forces will provide more than adequate incentive for development of substantial shale oil capacity during the time period in which the Parachute Creek Project will operate.

Mr. MacAvoy noted that the staff had been working with the Corporation's median scenario, a conservative and sound scenario. He stated that, as a student of Hotelling's law, which implies a scenario of annual price increases beginning in the near future, he could be even more optimistic about the Project's performance. He said it is very likely that the full present value of the cost in 1985 dollars will not be attained, the price guarantee payment payout will be smaller than projected, the rate of adaptation of second and third generation projects will be much faster, and the present value of the Project could exceed $5 billion. Mr. Groelinger noted the growing body of thought that the temporary depression in oil prices will accelerate the need for synfuels by reducing the rate of accumulation of resources, thereby bringing about reduced reserve availability and higher prices in the 1990's.

The open session of the meeting was recessed at 12:50 p.m., and was reconvened at 1:40 p.m.

Continuation of Discussion on Staff Findings Report

Mr. Keegan reported that Union had approved the public release of the drawings contained in the Technology and Engineering chapter of Union's Information Memorandum, as requested by Mr. Corcoran in the morning session.

Mr. Corcoran noted a lengthy discussion of the Project's financial viability without additional government assistance on page 43, and asked Mr. Groelinger to summarize that section. Mr. Groelinger explained that the section analyzes Union's incentive to undertake the Augmentation Program with no government assistance other than the original $400 million price guarantee assistance in the Phase I contract. In all cases the staff found that there was not an adequate financial incentive for Union to complete the project on its own or with third party debt financing. In general, Project performance without the additional assistance resulted in a rate of return of less than 5 percent, which the staff believed would not be sufficient for Union to reach any normal industrial targets. In response to Mr. Corcoran, Mr. Groelinger concluded that Union would not invest in the Augmentation Program without additional government assistance.

Mr. Corcoran asked how the staff arrived at the $83 million assessment of the value of existing facilities, found on page 45. Mr. Groelinger explained that the Corporation staff had looked at Union's most likely course of action given the current facilities and had assessed the highest value related to the maximization of tax benefits if Union did not go forward with the Augmentation Program. With cash flows discounted to 1985, the staff assessed the Project's cash value as the amount the Project would forego by carrying out the Augmentation Program, or $83 million. This figure was used only for purposes of computing the rate of return and does not count as equity contributed by Union to the Project.

Mr. Corcoran noted the staff's evaluation of the effect of any changes in the tax code found on pages 50 and 51 and asked the staff to summarize that section. Mr. Groelinger replied that any impact upon the Project of changes in the tax code will depend on the final form of those changes. The staff had looked at the substantial tax code changes proposed by the President, and had concluded that, if all of the President's proposals actually were approved by Congress, the project's rate of return would drop substantially and would give Union the right to terminate. He noted, however, that Union would not necessarily exercise that right.

Mr. Reichl asked what the Project's operating cash cost per barrel would be, disregarding capital charges, during initial operation with the augmented facility in early 1990. Mr. Axelrod replied that, in the Information Memorandum, Union forecasted operating expenses of $27 per barrel at a 10,000 barrel per day operating rate. Mr. Groelinger added that, with respect to ongoing operation, Union has indicated in the Agreement that their base case predicts viable operation of the Project through the year 2000.

Mr. MacAvoy referred to the table on page 45, titled "Discounted Rates of Return on Equity," and asked if Union had provided an estimate of the cost of capital. Mr. Groelinger replied that Union had not provided a weighted average cost of capital; however, the Information Memorandum contains certain information on the rate of return criteria and the methodology for establishing those criteria. He added that the Corporation's methods for establishing rate of return are significantly different from Union's traditional methods. Union usually looks at return on investment rather than return on equity and, in terms of return on investment, the project is substantially deficient from Union's perspective.

Review of the Due Diligence Report

Mr. Corcoran referred to the following paragraph on page 11 of the October 10 draft of the staff's Due Diligence report:

> Union also owns the Proprietary Rights to the Unicracking/DW Process (applied to shale oil upgrading) which uses as a catalyst a molecular sieve component developed by Union Carbide Corporation which dedicated to the public its sole patent on this material. Accordingly, no license is required from Union Carbide Corporation. However, Mobil Oil Corporation is suing Union Carbide for possible infringement of Mobil's patents. The Staff received confirmation from Union that it is currently negotiating with Mobil Oil to secure a license for the use, in the Unicracking/DW process, of molecular sieve components supplied by Mobil Oil, in the event that Mobil Oil wins its suit.

Mr. Corcoran asked what the impact would be on the Project's economics if Mobil won the lawsuit. Mr. Axelrod replied that it is difficult to judge the fees which Mobil would charge should Mobil be granted patent rights for the molecular sieve, but the fees would represent a very small portion of the Project's cost. Mr. Groelinger affirmed that such licensing fees would not likely cause a material change in the Project's financial picture.

Mr. Schroeder questioned the term "dedicated to the public." Mr. von Turk explained that once a technology is "dedicated to the public," anyone can use the technology without paying license fees. Mr. Axelrod predicted that, in this case, the charge for the molecular sieve license would be approximately $100,000.

Approval of the Amendment Agreement with Union Oil

Mr. Corcoran stated that it would be very interesting to know how many "person-hours" had been devoted to documentation of the project. Mr. Keegan stated that it was a substantial number and agreed to supply that information to Mr. Corcoran. Mr. Rawicz stated that the man-hours would have been even greater if the Corporation had not already drafted a price guarantee document in 1984 when the Corporation was considering the $2.7 billion Union Phase II contract. The Amendment Agreement was largely based on this document.

Mr. Noble mentioned a letter from Congressman John Dingell of Michigan in which Congressman Dingell requested a large number of Corporation documents and also requested that the Board make no award on the Parachute Creek Project until Mr. Dingell was satisfied that the Corporation had complied with his request for documentation. Mr. Noble asked if the Corporation were under any legal constraint as a result of Congressman Dingell's letter. Mr. Rawicz stated that he knew of no legal requirement that would prevent the Corporation from making an award, based on the request of a Congressman. He stated that Congressman Dingell had no legal authority as a chairman of a subcommittee to forestall action otherwise authorized. Mr. Noble stated that he had answered Congressman Dingell's letter and that the Corporation was in the process of responding to Mr. Dingell's request for documentation. Mr. Noble noted further that Congressman Dingell has charged that Board action on the Parachute Creek Project may be arbitrary and may violate the Energy Security Act and asked Mr. Rawicz to comment on that charge. Mr. Rawicz replied that the Corporation is a unique entity which is not incorporated under any state law and therefore is subject to no state laws concerning standards of conduct for members of a Board of Directors of a corporation. Instead, the Corporation's Directors must look to the Energy Security Act for guidance on how they should proceed. Section 116(d) of the ESA provides that each Director must, prior to assuming office, take an oath to discharge his duties in good faith, including that of making decisions on financial assistance awards. This responsibility is further spelled out in the section of the Act which describes how projects are to be solicited, the selection criteria for project awards and the large number of conditions that must be satisfied before the Corporation can make an award. In the case of the Parachute Creek Project, the Board directed the staff to analyze the Project, and the results of that analysis were provided to the Board and could be found in the extensive Findings Report under review by the Board at the meeting. The staff also prepared and has made available to the Board a Due Diligence Report as an independent assessment of all the representations made by Union in its Information Memorandum. Mr. Rawicz stated that, based on all this information, the Board members should apply their best judgment to the matters before them and should exercise that judgment to reach a decision. That was all the ESA required.

Mr. Noble commented that he had never served on a Board of Directors where the outside Directors devoted so much time to their fiduciary responsibilities and obligations. He complimented all of the Directors on their commitment to the Corporation and its goals.

Mr. Rawicz reviewed the text of the resolution to approve the Agreement with Union Oil. He noted that the resolution before the Board at the meeting differed slightly from one provided earlier to them and asked Ms. Jeanine Matte, Assistant General Counsel-Project Negotiation and Documentation, to explain the difference. Ms. Matte explained that the Energy Security Act requires the Corporation to ensure that the substantial terms and conditions of Corporation assistance will, to the maximum extent feasible, ~~have~~ a minimal impact on United States capital market activity. The Corporation is required, when making this determination, to seek the views of the Secretary of Treasury. The staff provided copies of the Agreement to the Department of Treasury on October 3, 1985. To date, Treasury has not provided written comments. Ms. Matte stated that she and Mr. Groelinger have discussed the Agreement with Treasury officials and they have responded to questions from Treasury concerning the transaction. She noted that the Agreement before the Board was very similar to other Corporation agreements which Treasury had previously examined, although it differed in that the specifics of the guaranteed loan are to be determined at a later date. Ms. Matte stated that the Department of Treasury staff indicated that they would prefer to see the actual loan guarantee implementation agreement, although the Corporation staff had discussed with them the fact that the key provisions of the guaranteed loan were already set. In the absence of specific Treasury comments, the staff has undertaken its own analysis of the Project's impact on U.S. capital markets but also has considered comments made by the Treasury Department on previous assistance transactions. Briefly, in the past, Treasury has been concerned that price guarantee assistance not be pledged by the recipient, and the Corporation routinely prohibits that in its contracts. Additionally, Treasury has discouraged 100 percent federal debt guarantees, citing OMB Circular A-70, which provides for 100 percent guarantees only when there is no other option. The Corporation has found from previous negotiations with lenders that the requirements of lenders to take a non-guaranteed portion of debt generally have not been workable with other requirements of the Corporation, or indeed with other requirements of Treasury, including such requirements as the provision against pledging of price support payments. The OMB Circular suggests that when 100 percent guarantees are provided, they should be placed with the Federal Financing Bank, and if they are not placed with the Federal Financing Bank, then maximum competition should be sought in identifying potential lenders to hold the guaranteed debt. The Corporation is prohibited by the ESA from placing its loan guarantees with the Federal Financing Bank. Union's Information Memorandum makes reference to Union seeking several proposals to obtain the best terms on this debt. The staff has considered all of Treasury's prior comments, but nevertheless recommends that when the full documentation is prepared, Treasury be given another chance to review and comment on the documents. The staff concludes, according to Ms. Matte, that the statutory requirement for consultation with Treasury has been accommodated by the staff's analysis and recommendation. Mr. Rawicz stated that Treasury provided verbal comments on the Corporation's agreements with the Cool Water and Dow Syngas commitments, but provided written comments on the Forest Hill agreement. The staff is still waiting, after approximately one month, for comments on the draft Seep Ridge agreement. He stated that it appears that Treasury considers this review to be a low priority item, specifically because their role is not one of concurrence, but is merely one of consultation. The Act requires the Corporation to make the ultimate finding on minimizing the impact of a project of a financial assistance award on U.S. capital markets. Mr. Rawicz stated that the staff's careful examination and their recommendation to submit the loan guarantee agreement to Treasury when it is completed sufficiently answers the requirement in the ESA for Treasury consultation.

On a motion duly made by Mr. Schroeder, and seconded by Mr. Reichl, it was unanimously agreed that

> WHEREAS, the Board of Directors on December 1, 1984 authorized a letter of intent and term sheet for financial assistance aggregating $2.7 billion in the form of price guarantees to the Union Oil Company Parachute Creek Shale Oil Program Phase II Project; and
>
> WHEREAS, On August 21, 1985, the Board of Directors stated its intent to amend the existing agreement for the Union Oil Company Parachute Creek Shale Oil Program Phase I Project entered into between Union Oil Company and the United States acting through the Department of Energy, which agreement was transferred to the Corporation on February 9, 1982, by modifying such Phase I Project to include the Unishale C technology (such modified project being hereinafter referred to as the "Union Oil Project") and to implement such letter of intent and term sheet, such amendment to provide for additional financial assistance in an amount not to exceed $500 million; and
>
> WHEREAS, the Secretary of Treasury on September 19, 1985 certified that such amount has been reserved in the Energy Security Reserve and that $2.2 billion of the $2.7 billion which was previously reserved for the Phase II Project has been unreserved and reinstated as unencumbered appropriations; and
>
> WHEREAS, the Board of Directors on September 24, 1985 approved key financial terms for additional financial assistance aggregating $500 million in the form of loan guarantees and price guarantees to the Union Oil Project; and
>
> WHEREAS, on September 24, 1985, the Board of Directors found the Environmental Monitoring Plan Outline submitted by the Union Oil Project acceptable; and
>
> WHEREAS, the terms and conditions of the proposed Amendment Agreement between the Corporation and Union

Oil Company of California (the "Sponsor") in the form presented to this meeting have been approved for execution by the Sponsor;

NOW THEREFORE, it is hereby RESOLVED, that the Board of Directors makes the following findings and determinations with respect to the award of loan guarantee and price guarantee assistance to the Sponsor, as incorporated in the Amendment Agreement presented to this meeting:

A. The Union Oil Project is a synthetic fuels project and the shale oil to be produced is a synthetic fuel;

B. The recipient of financial assistance for the Union Oil Project is a qualified concern;

C. An application for financial assistance for the Union Oil Project has been submitted by the Sponsor in the manner and containing the information required by the Corporation;

D. In awarding financial assistance to the Union Oil Project, the Corporation has considered:

1. diversity of technologies (including differing processes, methods and techniques);

2. a. the potential cost per unit of production of synthetic fuel from the Union Oil Project;

   b. the overall production potential of the technology used in the Union Oil Project, considering the potential for replication, the extent of the shale resource to be used in the Union Oil Project, its geographic distribution, and its potential end use; and

   c. the potential of the technology for complying with applicable regulatory requirements;

3. any specific tax credits directly associated with the Union Oil Project, any financial assistance, which has been, will be or may be provided by federal or state agencies, and the potential revenues generated by the Union Oil Project from the production of non-synthetic fuel products;

4. promotion of competition; and

5. the requirement of Section 127(f) of the Act that priority consideration be afforded to projects in states which indicate an intention to expedite all regulations, licensing and related government activities related to the project;

E. Shale, the feedstock to be used in the Union Oil Project, is a domestic resource that offers significant potential for use as a synthetic fuel feedstock;

F. The Amendment Agreement requires the Sponsor to develop, in consultation with the Department of Energy, the Environmental Protection Agency and the Colorado Department of Natural Resources, a plan, acceptable to the Corporation, for the monitoring of environmental and health related emissions from the Union Oil Project;

G. The Amendment Agreement provides for reports and maintenance of records by the Sponsor, and access by the Corporation adequate to ensure compliance with the Amendment Agreement;

H. The Amendment Agreement requires the Sponsor to provide for fair and reasonable participation by small and disadvantaged businesses in the Union Oil Project;

I. The Amendment Agreement requires that, with respect to the Parachute Creek Program (as defined in the Amendment Agreement), to the extent applicable, the Sponsor will comply with the requirements of Section 175(c) of the Energy Security Act relating to the Davis-Bacon Act;

J. The Amendment Agreement provisions ensure that the Sponsor bears a reasonable degree of risk in the construction and operation of the Union Oil Project;

K. Loan guarantees and price guarantees are required for the viability of the Union Oil Project and the Union Oil Project is necesary to achieve the purposes of the Act;

L. The amount of the loan guarantee (including principal and an allowance for accrued interest) does not exceed 75 percent of the Corporation's initial total estimated cost of the Union Oil Project and the maturity of the guaranteed loan does not exceed the earlier of the useful life of the Union Oil Project or 30 years;

M. In reviewing the need for loan guarantees, the Corporation has considered whether the Sponsor would otherwise be unable, exercising prudent business judgment, to finance the Union Oil Project, taking into account among other factors, the availability of debt financing under normal lending criteria based on the Union Oil Project assets;

N. The loan guarantee and the combination of assistance provided for in the Amendment Agreement encourages and supplements, but does not compete with or supplant, any private capital investment which would otherwise be available to the Union Oil Project on reasonable terms and conditions which would permit the Union Oil Project to be undertaken;

O. The Amendment Agreement provides for security and collateral appropriate for the repayment of any fixed or contingent obligations to the Corporation;

P. The Amendment Agreement requires that in the case of default, all patents, technology and other proprietary rights resulting from or required for the Union Oil Project shall be available to the Corporation or its designee to complete and operate the defaulting Union Oil Project;

Q. The Amendment Agreement provides for profit sharing on a fair basis;

R. The Amendment Agreement provisions assure that the investors having an ownership or profit interest in the Union Oil Project will bear a substantial after-tax risk of loss in the event of default or other cancellation of the Union Oil Project;

S. The Corporation has provided copies of the Amendment Agreement to the Secretary of Treasury for his consultation under Section 131(q) of the Act and the Corporation, having taken into account the consultation views of the Secretary of Treasury on prior awards of similar financial assistance and its own analysis, concludes that to the maximum extent feasible the timing, interest rate and substantial terms and conditions of the Amendment Agreement will have minimum possible impact on the capital markets of the United States, taking into account federal activities which directly or indirectly influence such capital markets, provided however that further consultation with the Secretary of Treasury shall be requested as indicated below;

T. Renegotiation of the guaranteed sales price as provided by the Amendment Agreement is necessary to assure completion or continuation of the Project and such completion or continuation is necessary for the Corporation to achieve the purposes of the Act;

U. The guaranteed sales price specified in the Amendment Agreement provides the minimum subsidy necessary to provide an adequate incentive in light of the projected prices of competing fuels and the requirements for economic and financial viability of the Union Oil Project;

V. The period of price guarantee assistance will not exceed ten years from the initial production date (as specified in the Amendment Agreement) of synthetic fuel;

W. The Amendment Agreement requires the Sponsors to pay a financial assistance fee of $2.5 million and an annual loan guarantee fee of one-half of one percent of the loan guarantee outstanding;

X. The aggregate amount of financial assistance awarded or committed to the Union Oil Project or to any one person, including such person's affiliates and subsidiaries, either directly or indirectly, does not exceed 15 percent of the total obligational authority of the Corporation; and

Y. The Amendment Agreement states the maximum aggregate liability of the Corporation for loan guarantees and price guarantee payments and the combination thereof computed in accordance with Section 152 of the Act; and further

RESOLVED, that the Board of Directors hereby determines that the form of Amendment Agreement presented to this meeting contains such terms and conditions as are required to address the requirements of the Act or which are otherwise satifactory to the Board of Directors; and further

RESOLVED, that the Chairman be, and he hereby is, authorized in the name and on behalf of the Corporation to execute and deliver the Amendment Agreement in the form presented to this meeting with such changes there as may be permitted by the Act, and as may be approved by the Chairman, his execution thereof with such changes to be conclusive evidence of such approval; and further

RESOLVED, that the Chairman be directed to further consult with the Secretary of Treasury with respect to the impact on capital markets of the United States of the timing, interest rate and substantial term and conditions of the financial assistance to be provided by the Amendment Agreement as further implemented by the Guaranteed Loan Agreement, Guaranteed Notes and, to the extent applicable, the Collateral Agreements, and to incorporate, to the extent practicable, any further consultation comments of the Secretary of Treasury and that the Chairman be directed to present to the Board for its approval forms of the Guaranteed Loan Agreement, Guaranteed Notes and Collateral Agreements after such consultation and prior to execution and delivery thereof; and further

RESOLVED, that, subject to compliance with the foregoing resolution, the Chairman and other appropriate officers of the Corporation be, and each of them hereby is, authorized and directed to do and perform, or cause to be done and performed, all such acts, deeds and things and to make, execute and deliver, or cause to be made, executed and delivered, such agreements, documents, certificates and instruments as may be necessary or appropriate to effectuate or carry out fully the purpose and intent of the foregoing resolutions, including the performance of the obligations of the Corporation under the Amendment Agreement.

Mr. Noble noted that work had begun more than a year ago on this agreement and thanked the staff and directors for their many hours of dedication.

Report on the Seep Ridge Project

Mr. Theodore Atwood, Project Officer, reported that final documentation on the Seep Ridge Project was nearly complete; however, the two legal questions discussed at the Board's September 24, 1985 meeting remained open. A recent decision of the Tenth Circuit Court of Appeals raised title and jurisdictional questions about the Seep Ridge site. According to the Tenth Circuit, intent of Congress to disestablish a Ute Indian reservation on land including the Seep Ridge site had not been adequately demonstrated; therefore, the land remained a part of the Ute reservation and was subject to Ute jurisdiction. There is a possibility that the State of Utah may not hold the title and may not have the right to lease the property to the Project. The Project's counsel recently provided an opinion that title was vested in the State of Utah. The Corporation's lawyers and independent counsel in Utah are examining the issue. Mr. Chet Shields, Senior Attorney, stated that the document drawn up by the Project's attorneys was lengthy and represented a good deal of research.

Mr. Corcoran asked what progress had been made in discussions between the Project and the Ute tribe regarding jurisdiction. Mr. Atwood replied that the Project sponsors had furnished a draft agreement to the Utes in early October, and had since met twice with Ute representatives to resolve their concerns. Mr. Corcoran stated that he would expect a report on their progress at the November Board meeting.

Mr. Atwood stated that the most important issue from the Corporation's point of view was a question of title, while the Project sponsors were more concerned about the question of jurisdiction. Mr. Shields said the Corporation was closely following the discussions between representatives of the Project and of the Utes, and that the Corporation's staff had reviewed the draft agreement presented to the Utes. Mr. Rawicz noted that any such agreement concerning tribal jurisdiction would have to be approved by the Bureau of Indian Affairs.

Mr. Schroeder stated that he would be looking carefully at the majority owner's potential interest in synthetic fuel production and the likelihood of replication of the project. He said he was disappointed with the lack of information in that regard which had been received from the majority owner, Peter Kiewit and Sons. Mr. Atwood replied that the staff's Findings Report contained analyses of the programmatic value and social benefit of the Project, but he would be glad to discuss the issue in more depth with Mr. Schroeder.

Discussion on New Solicitations

Mr. Noble stated that the Board would receive briefings on the status of the Eastern Coal and Tar Sands solicitations in closed session because the briefings would include specific technical and business information.

Closing the Meeting

On the motion duly made by Mr. Reichl and seconded by Mr. Corcoran it was unanimously

> RESOLVED, that the portions of this meeting consisting of agenda item VI (Status Report--Eastern Coal Solicitation Projects) and agenda item VII (Status Report--Tar Sands Solicitation Projects) be, and they hereby are, closed to public observation, it having been determined by the Board of Directors in open session that those portions of the Board's deliberations should properly be considered in closed session pursuant to section 116(f)(1) of the Energy Security Act.

Closed Portion of the Meeting

That portion of the October 16, 1985 meeting of the Board of Directors of the United States Synthetic Fuels Corporation, closed pursuant to a motion duly made, seconded and unanimously adopted in open session, was called to order at 3:04 p.m. by Chairman Edward E. Noble in room 403, 2121 K Street, N.W., Washington, D.C. In addition to the Chairman, the following members of the Board of Directors of the Corporation, constituting a quorum of the Board, were present:

Thomas J. Corcoran
Paul W. MacAvoy
Eric H. Reichl
Victor A. [redacted]

The following officers and employees of the Corporation were also present:

Leonard C. Axelrod, Vice President - Technology and Engineering
Ralph L. Bayrer, Vice President - Projects
Robert L. Fairman, Vice President - Administration
S. Kenric Lessey, Jr., Inspector General
Russell F. Miller, Deputy Inspector General
Leonard Rawicz, Vice President, General Counsel and Secretary
Donald A. Webster, Vice President - External Relations
Michael J. Bayer, Counsel to the Vice Chairman
Ralph C. Blackwell, Director - Negotiations
Jeanine L. Matte, Assistant General Counsel - Project Finance (Negotiation and Documentation)
Betty A. Nolan, Executive Assistant to the Chairman
Kathryn L. Peyton, Assistant to the Secretary

Status of the Eastern Coal Solicitation

Mr. Ralph Bayrer briefed the Board on the evaluation status of the proposals submitted under the Eastern Coal Solicitation, beginning with the fluidized-bed category. Mr. Reichl asked Mr. Bayrer why the cost per ton of the product of the COGA-1 Project was much lower than that of the Keystone Project, although the differences in the technologies being proposed were not great. (Mr. Charles A. Cowan, Jr., Senior Vice President - Projects, joined the meeting.) Mr. Bayrer replied that there was much greater uncertainty over the numbers being proposed by COGA-1. Mr. Reichl stated that there could not be that much uncertainty and that there appeared to be a tremendous discrepancy.

Mr. Corcoran asked if it were not true that one of the problems with the Keystone Project was the Corporation's participation in the financing of a power block, escalating the level of assistance required. Mr. Reichl stated that the Corporation was not allowed to finance a power block. Mr. Corcoran stated that he thought one of the main issues surrounding the Keystone Project was the ability of the sponsor to get rate relief from the Pennsylvania Public Utilities Commission on electricity from the power block. Ms. Matte replied that the project would not draw down guaranteed debt to build the power block; loan guarantees for that purpose are prohibited by the ESA. Price assistance would be provided on the gas transfer, not on electricity. She stated that the market price received for the gas would have to be negotiated. The Signal Companies (Signal), sponsor of the Keystone Project, have stated that they may leverage lease the power block, but they would ultimately be accountable to the lessee for gas to run the power block. Therefore, they might have to buy gas if the gasification process does not operate. Because of that risk, the sponsor is seeking returns on what they consider to be their total exposure on the Project. Mr. Reichl stated that he was comparing the Keystone Project with the Cool Water Project, which he considered to be a similar technical undertaking, but which involved a much lower level of Corporation assistance. Mr. Rawicz observed that Cool Water has a very favorable rate for its electricity from the state of California. Mr. Noble noted that, without the power block, the Project's capital costs would only drop about dollars. Ms. Matte stated that she was not sure what amount of capital costs were involved in the power block. Mr. Corcoran asked how the level of Corporation assistance would be affected. Mr. Blackwell stated that it would not be very different from the amount presently under consideration. Ms. Matte stated that the power block enters the equation for Corporation assistance in two ways. First, Signal considers the risk arising from the power block to be part of their equity exposure. Second, the price of the gas to be paid by utility purchasers will be set on an avoided cost basis and is likely to be low. Even without the power block equity exposure, the rate question on the transfer price of the gas could keep Corporation assistance high.

Mr. McAvoy asked if the proposed price guarantee assistance were set so high because the price guarantees would be disbursed over a long period of time. Mr. Rawicz stated that Signal would depreciate the power block over 10 years and therefore the price guarantees would be spread over the same period. Mr. McAvoy stated that he was mystified as to how Signal could request $1.2 billion in price guarantees when the sponsors of COGA-1 were requesting only $350 million for a project which would produce six times more output. (Mr. Cowan left the meeting.) Mr. Reichl stated that Keystone's projected investment per day of daily input was much higher than COGA-1's, but he did not know why. (Mr. Theodore Atwood, Project Officer, joined the meeting.) Mr. Blackwell stated that the staff had "scrubbed" Keystone's numbers, but had not had the opportunity to "scrub" COGA-1's numbers. Mr. Atwood stated that Keystone is working from a more detailed design. (Mr. Cowan returned to the meeting.) Mr. Reichl noted that the design of the COGA-1 Project is based on DOE's Memphis Project. Mr. Atwood stated that the Memphis Project was designed to process 2,000 tons of coal per day at 50-90 pounds of pressure. COGA-1 is intended to process 5,000 tons per day using 150 pounds of pressure. He stated further that he believed that COGA-1 had relied too heavily on the design for the Memphis Project, which was designed to produce fuel gas rather than ammonia.

Mr. Reichl asked about the status of the Ohio-1 Project. Mr. Bayrer replied that it was unlikely that Ohio-1 would meet the deadline for submission of the Qualification Proposal. At the September 24, 1985 meeting, the Board had agreed to extend the Project's deadline for submission of the Qualification Proposal until November 12, 1985. Mr. Corcoran noted that the extension had been given with prejudice. Mr. Reichl said that the Board would likely approve only one fluidized-bed coal gasification project, and that he would like to see a broad competition. He stated his belief that the Ohio-1 Project could be a good competitor because the sponsors were starting from a larger design base. Mr. Corcoran stated that he was wary about delaying a decision beyond November, and that the Corporation should proceed at a reasonable pace in order to avoid charges of "deadline slipping." Mr. Bayrer said that, as a practical matter, the staff would probably recommend at the November Board meeting that both COGA-1 and Keystone had met the Solicitation criteria. The final proposal for qualified Projects under the Solicitation is due in March 1986, and Mr. Bayrer felt Ohio-1 might "catch up" by that date. Mr. Bayrer stated that the sponsors of the COGA-1 Project had expressed a willingness to consider a smaller design if the Board desired, although their preliminary analysis indicated that decreasing the Project's size would not proportionately decrease the required level of assistance and would weaken the financial prospects of the Project.

Mr. Bayrer reported on the two proposed projects in the entrained-flow category, Davis Synthine and Scrubgrass. Davis Synthine was unresponsive to the Solicitation. Scrubgrass, while responsive, is not thought likely to qualify. Mr. Bayrer said the basic approach of the Scrubgrass Associates, sponsors of the Project, has been to avoid the early investment of engineering work required to define the Project. Sponsors' cost estimates were based on separate quotes from vendors rather than on an integrated design. Mr. Corcoran asked what was the status of Scrubgrass' request for a cost sharing agreement under the provisions of section 131(u) of the Energy Security Act. Mr. Bayrer replied that the staff had met with representatives of Scrubgrass Associates to discuss the prospect of 131(u) assistance. Mr. Bayrer said he doubted whether the general partners could guarantee performance under such an agreement; Scrubgrass had not provided the Corporation with a detailed estimate of the cost of the 131(u) effort and had included items in their request for 131(u) assistance which should have been included in the Qualification Proposal. In response to Mr. Reichl, Mr. Bayrer said the staff would make a recommendation on the 131(u) request at the November meeting. Mr. Corcoran asked if the staff would rank the Eastern Coal Projects at the November meeting. Mr. Bayrer replied that the Eastern Coal Projects would not be ranked until after the Project Proposals were submitted in March. The Tar Sands Projects could be ranked at the November meeting if appropriate. Mr. Corcoran asked if the Board could direct the staff to go to negotiation and documentation with any of the Eastern Coal Projects prior to ranking. Mr. Bayrer said that the Board could give that direction, but the staff would have to proceed with negotiation and documentation with all of the qualified proposals.

Status of the Tar Sands Solicitation

Mr. Bayrer stated that two of the projects, International Hydrocarbons and Chemech, were unresponsive to the criteria of the Tar Sands Solicitation. While the other two projects, Sunnyside and PR Spring, did not appear to meet the Solicitation criteria completely, the two Projects had provided sufficient data for meaningful evaluation. Of the two, Sunnyside is much closer to completing the design requirements and to meeting the Solicitation criteria. The staff intends to recommend to the

Board at the November meeting that the Corporation proceed with the evaluation process as described in the Solicitation and rank the two eligible projects. This may enhance the ability of the sponsors to complete their equity.

Mr. Rawicz cautioned the Board that any potential changes in the rules of the competition for either Solicitation would require careful analysis. The staff will provide their recommendation on this matter at the November meeting.

The meeting was adjourned at 3:50 p.m.

Secretary

MINUTES
# of the
MEETING
# of the
BOARD OF DIRECTORS
# of the
UNITED STATES SYNTHETIC FUELS CORPORATION

November 19, 1985

The meeting was convened at 10:40 a.m., November 19, 1985, in Room 503, 2121 K Street, N.W., Washington, D.C., pursuant to the call of the Chairman and after public notice of the meeting as required by Section 116(f) of the Energy Security Act (42 U.S.C. 8712(f)(1)(1983 Supp.)), published in the Federal Register on November 14, 1985. A quorum of the Board being present, Edward E. Noble, Chairman of the Board of Directors, called the meeting to order and presided. In addition to the Chairman, the following members of the Board were present:

Thomas J. Corcoran,
Paul W. MacAvoy
Eric H. Reichl
Victor A. Schroeder

Leonard Rawicz, Vice President, General Counsel and Secretary, acted as Secretary of the Meeting.

Chairman's Opening Remarks

The full text of the opening remarks, as presented to the meeting, is affixed to these minutes as Attachment A.

Approval of the Minutes

Mr. Schroeder requested that a correction be made on page 10 of the minutes of the Board's October 16, 1985 meeting.

On a motion duly made by Mr. Reichl and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the minutes of the meeting of the Board of Directors held on October 16, 1985, as corrected, be, and they hereby are, approved.

On a motion duly made by Mr. Corcoran and seconded by Mr. Schroeder, it was

> RESOLVED, that it is the judgment of the Board of Directors that those parts of the minutes of the closed portion of the meeting of the Board of Directors held on October 16, 1985 deleted from said minutes relating to the Board's deliberations respecting the eastern coal solicitation projects may properly be withheld from public disclosure pursuant to the provisions of subsection 116(f)(1)(C) of the Energy Security Act.

Consideration of Summary of the August 13, 1985 Board Discussion

Mr. Rawicz outlined two resolutions concerning a summary of informal discussions held by four Directors on August 13, 1985, which was prepared by Mr. March Coleman, Assistant General Counsel--Corporate and Litigation, after consultation with the four Directors. He stated that the first resolution would adopt the summary as minutes of the Board, and the second resolution would authorize release of the summary to the public. Mr. Coleman noted that there had been discussion at the Board's September 24, 1985 meeting about the conclusion of the Legal Services Group that the Board's discussions had constituted a "meeting to conduct official business of the Corporation" within the meaning of the Energy Security Act (ESA), and that the discussions did not come within the ESA's exemptions from public disclosure. At that meeting, the Board had requested the staff to obtain an independent review of these issues by an outside law firm. Mr. Coleman stated that the Corporation had engaged the Washington law firm of Covington & Burling, who had reviewed these issues and had concluded, in an opinion letter dated October 23, 1985, that the Directors' discussions constituted a "meeting" of the Board of Directors within the meaning of the ESA and that they did not come within the statutory exemptions from public release. Mr. Reichl stated that he was concerned about setting a precedent, and asked whether the Board would have to release to the public a statement by a Director about an illness. Mr. Coleman replied that each case would have to be examined on its merits, but indicated that a statement about a Director's illness might not have to be released to the public.

Mr. MacAvoy asked Mr. Coleman for his appraisal of the guidelines set forth in the Covington & Burling opinion letter, and how helpful he felt they were in informing the Board's decision in this matter. Mr. Coleman stated that he agreed with the general structure of reasoning in the opinion letter, and noted that Covington & Burling had considered the proper authorities as a basis for their opinion, i.e., the ESA, legislative history, and the Corporation's "Statement of Policy on Public Access to Board Meetings." Mr. MacAvoy stated that he was surprised by the weight which the two outside attorneys had placed on the Government in the Sunshine Act (Sunshine Act), which ostensibly does not apply to the Corporation, in order to "bootstrap" a set of precedent cases and decisions as if they did apply to the Corporation. Although the lawyers were quite candid about the lack of a clear line of decision in the case, they used the one public statement on this issue, made by the Board in 1981, as the basis for citing a full array of precedents from the Sunshine Act as if that Act applied to the Corporation. Mr. MacAvoy stated that this was very "courageous" decision-making, and he thought it was a very controversial way to review the issue. Mr. MacAvoy stated that he thought it very likely that another lawyer reviewing the issue would decide differently. Mr. Coleman stated that he believed it unlikely that other lawyers would differ on the question of whether it is appropriate to look to the Sunshine Act in trying to interpret what the term "meeting" means in the ESA, because the legislative history and the wording of the ESA, as well as the Corporation's policy statements, lead to the conclusion that it is appropriate to look to the

Sunshine Act in interpreting the meaning of that term. Mr. MacAvoy asked why the Corporation's Board had decided to make a statement on the issue if it were so clear from the legislative history that the Sunshine Act was the appropriate source for interpretation. He stated that "ratcheting over this mammoth pile of case law" from another statute was an act of great courage. Mr. Coleman stated that he did not know why the Board had issued the Policy, but said it was possible that the prior Board was merely clarifying their intentions in this regard; he thought that no degree of uncertainty in the matter was necessarily implied. He added that there were other independent reasons for referring to the Sunshine Act to interpret the term "meeting," in addition to the Corporation's Policy.

Mr. Schroeder asked the staff to explain the following sentence in the Covington & Burling letter: "We do not believe that Congress, having by reference made Sunshine Act exemptions applicable to the Corporation, meant that the exemptions incorporated by reference in the Energy Security Act should have any meaning other than their meaning as applied to the federal agencies for which they were written." Mr. Andrew P. Tashman, Deputy General Counsel, stated that this sentence means that Congress, by making the exemptions under the Sunshine Act available to the Corporation, had intended that interpretations concerning those exemptions developed in litigation involving federal agencies should apply when Sunshine Act exemptions are interpreted by the Corporation. Mr. MacAvoy stated that it was an unreadable sentence.

Mr. MacAvoy questioned Covington & Burling's conclusion that "official business of the Corporation" includes all activities of the Corporation. He did not find that conclusion convincing, and he stated that he interpreted "official business" to mean activities that carry out the purposes of the statute. Mr. Noble agreed, and said that personnel matters which do not affect project activities should not be considered "official business." Mr. Coleman stated that he believed a decision on the matter at hand would not necessarily create the sort of strong precedent that was causing concern to the Directors. He said that this particular matter involved a potential action that is a non-delegable Board function, and that it was clear legally that the proposed action discussed at the August 13 meeting was "official business." He stated that there was no intent in the Covington & Burling opinion letter, or in his own statements, to suggest that all activities of the Board ipso facto would constitute "official business." Mr. MacAvoy said that the Board did not have any clear ground rules for excluding some activities from "official business." He stated that, by defining the activity discussed on August 13, 1985 as "official business," the Board, by inference, was setting the broadest possible definition of the term. Mr. Coleman replied that the Covington & Burling opinion focuses specifically on the fact that the proposed action under discussion on August 13 was a non-delegable Board function, and notes that another section of the ESA makes it clear that some personnel actions are subject to public disclosure. Mr. MacAvoy stated that he knew of no guidelines specifying what is or is not "official business" in discussions of personnel matters, except for a de minimus criteria that was not very helpful. Mr. Tashman stated that the Directors should put the role of the Board in perspective with the role of the Chairman concerning personnel activities. Much personnel activity is the responsibility of the Chairman, while the Board's responsibilities relate primarily to the hiring and firing of officers, the establishment of a system of organization, the setting of general categories of employees, and the approval of levels of compensation. When the Board is considering formal action in an area which is a non-delegable Board function, that action and consideration of that action is the stuff of a "meeting", as defined by the ESA. The question then becomes whether the record of the content of the meeting can be exempted under the exemptions of the ESA. Mr. Tashman noted that the Corporation has wrestled with this problem since it began operations. In 1980, the Corporation received an opinion from a senior counsel at the Department of Energy stating that deliberations concerning the hiring of an officer must be public. Mr. Tashman noted that the Corporation has recognized that this can create problems, and that the Corporation does not have the freedom of a private sector corporation in this area. He stated that the Covington & Burling opinion letter provides a fresh look at the issue and the result is consistent with previous opinions of the Department of Energy and the Corporation's Legal Services Group.

Mr. MacAvoy asked Mr. Tashman if he thought the Covington & Burling analysis was controversial or definitive. Mr. Tashman replied that, given the facts of this particular discussion, he believed that, were the matter to be referred to other law firms, the same conclusion would be reached by all.

Mr. MacAvoy noted that he had three problems with the Covington & Burling analysis: (1) the analysis "bootstraps" precedents to be used in interpreting the ESA with a nonapplicable statute; (2) the definition of "official business" used by Covington & Burling turns the definition inside out, in that it makes acquisition of inputs the equivalent of outputs, whereas most statutes which define official business only make outputs official business; and (3) the letter provides insufficient reasons for determining that there was not any indication of privacy invasion sufficient to exempt the material from public release. He noted that the Covington & Burling letter suggested that the Board, when discussing a personnel matter which might involve invasion of an individual's privacy, should take minutes of the meeting, no matter where it is held, and should look at the minutes to determine whether or not there were any indications of privacy invasion. He said that Covington & Burling had concluded in this case that "the discussion that occurred at the August 13 meeting, as it has been distilled in the summary of the discussion provided to us, apparently did not degrade" the official or "bring into question his honesty or other personal characteristics, or even his professional competence," and that the public's interest in having access to such discussions "outweighs the officer's privacy interest." Mr. MacAvoy stated that the Covington & Burling method would strongly affect the tenor of a Board meeting and discussions of personnel matters. He said that it was very likely that there would be much disagreement over what constitutes invasion of privacy, and he thought that the Covington & Burling letter was setting up a very bad practice. He hoped that this opinion would not constitute definitive case law on all of the Board's future procedures.

Mr. Corcoran agreed with Mr. MacAvoy that the interpretation of invasion of privacy was controversial. He said it was his hope that, as a result of this problem, the Compensation Committee would be asked to look at a modification of corporate policy with respect to protecting Corporation personnel from invasion of privacy. Mr. Corcoran stated that in this particular case; however, he felt that a "meeting" had taken place, and that the minutes should be released to the public. He stated that the Covington & Burling letter was a compelling opinion on those two points, and that the Board should act on the resolution.

The resolution to approve the summary of the August 13 discussions as minutes of the Board, to be maintained as Board minutes in the Corporation's records, failed to pass, on a vote of three yeas to two nays, Mr. MacAvoy and Mr. Reichl in the negative.

Remaining Letter of Intent Projects

Mr. Noble stated that the Board would receive a status review and update on the remaining Letter of Intent projects. He noted that the Northern Peat Project has been inactive for some time, while the Seep Ridge and Cathedral Bluffs Projects have continued to be active. He stated that the Board would set milestones at the meeting concerning the Northern Peat Project. He also noted that the Board continues to watch with deep interest the progress being made by the Great Plains Project, and the Board is encouraged by the smoothness of the operations to date and the impressive dedication and professionalism of the Great Plains staff. The Board remains hopeful that a long-term solution in the interest of the Project, the State of North Dakota and the Nation can be found.

Seep Ridge Project

Mr. Theodore Atwood, Project Officer, stated that the Corporation had received opinions from counsel hired by the Seep Ridge Project and the Corporation's Utah special counsel on issues relating to the Seep Ridge Project. In addition, three members of the Corporation staff had held a public input meeting at the site. Mr. Chester R. Shields, Senior Attorney, reviewed for the Board the background of the legal issues surrounding the Seep Ridge Project, as discussed at their September 24 and October 16 meetings. A recent decision of the Tenth Circuit Court of Appeals raised title and jurisdictional questions about the Seep Ridge Project site. According to the Tenth Circuit Court, intent of Congress to disestablish a Ute Indian reservation on land including the Seep Ridge site had not been adequately demonstrated; therefore, the land remained a part of the Ute Reservation and was subject to Ute jurisdiction. The title issue arises because the Project is located on State lands which were granted to Utah by the federal government for the support of public schools under the Utah

Enabling Act of 1894. Pursuant to Section 6 of the Utah Enabling Act, such school sections could not be granted to the State if they were included in "Indian, military or other reservations of any character...until the reservation shall have been extinguished and such lands restored to the public domain." The Tenth Circuit Court's decision that the Project site is within a reservation therefore raises questions concerning the validity of the State's title to those lands. The Corporation asked the Project for an opinion on the title issue, and also retained special Utah counsel to provide the Corporation with an opinion on the title question. The Seep Ridge Project retained Mr. Charles Hobbs, a well-respected Indian affairs expert, who concluded that while there are strong arguments for Utah's title to the school sections not vesting, a court would probably conclude that the title did vest. According to Mr. Hobbs, to properly understand Section 6 of the Utah Enabling Act, it is necessary to go behind the language of Section 6 and to analyze congressional intent in the matter. Mr. Hobbs marshalled arguments which indicate that Congress, in the time frame of 1894, used the word "reservation" to mean lands owned by or held for Indians, rather than lands within a reservation's boundaries. Therefore, the requirements of Section 6 that the reservation must be "extinguished" and "restored to the public domain" were satisfied in 1897 when the reservation was opened to disposition under the public land laws. Mr. Hobbs supported this argument with four subarguments. First, Mr. Hobbs turned to Section 3 of the Utah Enabling Act, which concerns taxation issues. Mr. Hobbs noted that in the congressional committee reports discussing Section 3, Congress used the term "reservation" to mean land owned by or held for Indians. Second, the 1889 Omnibus Enabling Act contains language nearly identical to Section 6 of the Utah Enabling Act. In 1904, the Omnibus Enabling Act was amended to permit grants of school sections within a reservation, and these grants were stated to be in conformity with the Omnibus Enabling Act, rather than additional grants of school sections. Third, an 1895 act permitted school sections within reservations where the government had purchased the land. Mr. Hobbs acknowledged that this act is not directly applicable, but believed it is indicative of congressional intent at the time. Fourth, Mr. Hobbs pointed out that numerous courts have held that states received title to school sections once the Indians' title had been extinguished without regard to their location within reservations under other state enabling acts.

The Corporation hired the Salt Lake City law firm of Fabian & Clendenin to provide an independent opinion on the title issue. Fabian & Clendenin concluded that a court would most probably conclude that Utah's patents to the school sections, granted in 1964 and 1966, were void, but that the court would not reach the issue since it is more likely than not that a court would hold the suit to be barred by 43 U.S.C. §1166, a statute of limitations. Mr. Shields analyzed the Fabian & Clendenin memorandum in two sections, the first dealing with the validity of Utah's title, and the second dealing with the application of the statute of limitations to bar a suit challenging that validity. Fabian & Clendenin's argument with respect to title is basically that the plain meaning of Section 6 requires both the restoration of the land to the public domain and the extinguishment of the reservation in order for the State's title to school sections to vest. They found, upon analysis of legislative history and contemporary understanding, that these were two different requirements. In support of their view, Fabian & Clendenin addressed the issues raised by Mr. Hobbs and also raised additional points. First, they noted that the language in Section 3 of the same law uses terms of ownership and title, rather than reservation, and that this was an indication that when Congress wished to talk about issues of title and ownership it clearly knew how to do so. A review of legislation and court cases in the 1890s and early 1900s made it fairly clear that the concept of non-Indian land in Indian reservations, if not common, was certainly not unusual at the time the Utah Enabling Act was passed. The Fabian & Clendenin memorandum proceeded to address two subsequent legislative enactments dealing with the opening of reservations in North and South Dakota. In those enactments, there were specific grants of school sections within reservations. The Fabian & Clendenin view is that, were Mr. Hobbs' reading of Section 6 correct, this would not have been necessary. Similarly, the 1895 Act referred to by Mr. Hobbs permitting the selection of school sections within reservations if the goverment had purchased the land would also not have been necessary. The Fabian & Clendenin memorandum pointed out that recent Supreme Court cases and, in fact, the Tenth Circuit Court decision itself, have made it clear that "return to the public domain" or "open to disposition under land laws" language in Indian legislation does not have the same meaning or effect as extinguishing or disestablishing language does. If it did, the problem would not exist. The general law of public lands, not specific to Indian reservations, makes it clear that once a reservation has been established, a patent cannot be validly issued by the land department. This rule is derived from the federal right of preemptive use of land. On that basis, Fabian & Clendenin concluded that, while the matter is not free from doubt, Utah's title to the land is probably voidable.

Fabian & Clendenin then discussed the statute of limitations, 43 U.S.C. §1166, which limits the government's authority to annul a federal patent to within six years of issuance. Because Utah's patents to the school sections upon which the Seep Ridge Project is located were issued in the 1960s, Fabian & Clendenin argued that a government suit over the validity of Utah's patent would be barred, since no applicable exceptions under the statute of limitations apply in this case. Section 1166 is applicable so long as the land is public land open to sale or conveyance by the land department. Where land is available for such disposition, courts have held that §1166 normally bars a suit; however, courts have also generally held that lands within a reservation are not available for disposition by the land department. In the Seep Ridge situation, the Project's school sections not only were located within a reservation, but also were available for public disposition. Fabian & Clendenin were unable to find any authoritative decision directly on point, but they did find a 1908 Supreme Court decision which held that, if the public land were open for disposition by the land department, §1166 could bar federal suit for recovery even if the government argued that the land in question was in fact within the reservation. There is a Court of Appeals case from the late

1930s which held that lands reserved for a military base were not open to sale because they were not public lands. So interpreted, this case would support the application of the statute of limitations and would validate the state's title. The case could also be interpreted to say that the land department lacked statutory authority to issue the patents in question. Under the second interpretation, §1166 would arguably not apply to the Project site because, while the land office could sell land to homesteaders or for any other use, it could not issue a patent in violation of the Utah Enabling Act. On balance, Fabian & Clendenin feel it is more probable than not that the court would find the school sections open to disposition under the land laws, and, therefore, that the government suit would be barred. There is one additional exception to the applicability of §1166. If there is a third party interest, e.g., where the government holds land in trust for Indians, that interest would prevent the application of §1166. Both Fabian & Clendenin, and to a lesser extent Mr. Hobbs, are of the opinion that the interest of the Ute tribe in these school sections is too remote to rise to a level where this exception can be brought into play.

Mr. Shields stated that the bottom line is that, while there is doubt, both Mr. Hobbs and Fabian & Clendenin conclude that, if the case were litigated, Utah would likely end up with title.

Mr. Schroeder asked if mineral rights went along with title. Mr. Shields said that in this case the mineral rights issue complicated the question of when Utah's title vested, but did not change any conclusions. When the reservation was opened in 1897, there was an exception for lands holding certain minerals, and it is not clear whether oil shale would fit into this exception. Later congressional enactments and executive orders, however, made the mineral rights available to the public.

Mr. Corcoran noted that, in the opinion of the attorneys involved, the State of Utah's title to the school sections is not 100 percent clear, and in Mr. Corcoran's view, it was highly unlikely that additional evaluation would produce a clear title. He asked the staff if they were thinking of making some assessment of the risk involved in the matter. Mr. Shields agreed that, given the abstruseness of the questions involved, it would be highly unlikely that a clear opinion could ever be reached without litigation. As to the allocation of risk burden, he stated that there were various ways to allocate the risks involved. Mr. Corcoran asked if the staff would be prepared to make a recommendation on the matter. Mr. Shields replied that the staff could be prepared to propose options to the Board. Mr. Reichl asked who would benefit if a title decision was made adverse to the sponsor's interest. Mr. Shields responded that both opinions agree that, barring something unusual, the contest is between the State of Utah and the federal government, and that no suit on behalf of the Indians is likely to be filed. If the federal government successfully challenges Utah's title to the school sections, title would revert to the federal government and the school sections would become federal lands. Under an executive order issued by President Hoover in 1930, with the exception of some pilot projects like the Cathedral Bluffs Project, federal land is not available for leasing for oil shale development. A congressional enactment or an executive order would be needed to make an exception in this case. Furthermore, were the federal government to challenge Utah's title to the school sections, under the terms of the Utah Enabling Act the federal government would have to reallocate federal lands of comparable value to the State in compensation.

Mr. Reichl asked when action would be brought if the Corporation were to proceed with the award to Seep Ridge. Mr. Shields replied that, with respect to the case itself, the State of Utah had petitioned the Tenth Circuit Court for a rehearing. The court has given the parties some time to brief the issue and has no timetable when it must rehear the case. Assuming either that the court does not grant a rehearing or that on rehearing it does not come to a different conclusion on any of the issues, the State of Utah has indicated that it intends to file for a discretionary review by the United States Supreme Court. Were the Court to accept the case it could be years before the matter is resolved. In the meantime, Congressional sources indicate that they might seek a legislative solution to the problem. The Corporation has provided copies of Mr. Hobbs' and the Fabian & Clendenin opinions to the Department of Interior and the Department of Justice and also to the Utah Attorney General's office, and has asked for their comments. Mr. Shields said it was highly unlikely that the Corporation will know any more in six months than it does at present, other than what may be learned from the comments of the Department of Interior and the Department of Justice.

Mr. MacAvoy asked why the Board could not proceed to vote on the Seep Ridge Project. Mr. Noble replied that he did not feel that all the questions had been answered and he thought there were loose ends which should be addressed before the Board voted on the Project. He asked the staff to summarize the open issues in writing so that the Board could consider them at further length.

Mr. Reichl complimented Mr. Shields on his presentation and stated his opinion that, by voting on the project, a resolution of the open issues might be reached more quickly. Mr. MacAvoy stated that, in his view, the risks involved in the title question should rest with the sponsors. If the sponsors are prepared to undertake the Project, Mr. MacAvoy stated that the Corporation would be in a position to obtain positive technical gains whether the sponsor succeeds against the legal risks or not.

Mr. Reichl stated that the technical risk in the Project is probably greater than the legal risk, yet he regards it as a good Project. Mr. Shields suggested that the Board address the question of risk analysis further in its closed session, and reminded the Board that there were also questions involving jurisdiction of the Ute Tribe which needed to be discussed.

Mr. Andrew Lawrence, Director-Environment, reported on the public input meeting held in Vernal, Utah with interested local residents and government and business officials. He noted that prior to the public meeting, the staff met with a representative from the Bureau of Indian Affairs and a representative of the Energy and Mineral Resources Department of the Ute Tribe. The Tribe is still reviewing the Tenth Circuit Court's decision and its position on jurisdiction has not been formulated. The Tribe's representative at the meeting indicated that he was not authorized to speak for the Tribe. The role of the Bureau of Indian Affairs is limited to property management of trust lands on behalf of the Tribe, and the Bureau is not actively involved in monitoring mineral development.

Approximately twenty-five people attended the public input meeting, and support statements were made by various local organizations. A member of the Ute Tribe attending the meeting indicated that the Project is on lands that have always been claimed by the Tribe and the Tribe has an interest in all activities occurring on those lands. He stated that the Tribe has not determined what that interest might be in the Seep Ridge case. Mr. Lawrence noted that further discussion in the public input meeting revealed a lack of communication between the Uintah County Commissioners and the Ute Tribe regarding energy development in the area in general as well as certain activities of the Project itself. He stated that the Corporation may have helped to open a channel of communication between the two groups. The staff's opinion is that the Seep Ridge Project is generally supported by local officials and the business community. The Ute Tribe is withholding judgment pending review of the Tenth Circuit Court's decision. Mr. Lawrence stated further that the staff had not noted any specific opposition to the Project from the two members of the Ute tribe with whom they spoke.

Mr. Leonard Axelrod, Vice President-Technology & Engineering, reported on Department of Energy interests in the applicability of Seep Ridge's technology to the eastern shale resource technology. DOE recently announced its involvement in a small project in Indiana run by a company called Eastern Shale Research. The Indiana project will use the LOFRECO process and involves coring, drilling and blasting of eastern shale and the burning of one small retort. Eastern Shale Research has hired Mr. Mitchell Lekas of Geokinetics and Mr. Paul Petzrick as consultants. Eastern Shale Research has contributed $35,000 to that project, the State of Indiana has contributed $74,000, and the Department of Energy has contributed $225,000. Mr. Axelrod stated that he had been surprised at the DOE award since it was inconsistent with the Secretary of Energy's recent statements on oil shale technology.

Mr. Schroeder asked what was the relationship of Peter Kiewit and Sons, the major Seep Ridge Project sponsor, to the LOFRECO process. Mr. Axelrod replied that the LOFRECO process is owned by Geokinetics, the other sponsor of the Seep Ridge Project. Mr. Frank Hill, Director-Finance, added that Peter Kiewit and Sons has been licensed to use the technology. Mr. Shields stated that Geokinetics owns the LOFRECO process, but has licensed that process to the Seep Ridge partnership and has also licensed it to Gilbert Shale Oil, a wholly-owned subsidiary of Peter Kiewit. Mr. Reichl asked what sort of fee Geokinetics was charging Peter Kiewit for the license. Mr. Shields replied that, with respect to the Seep Ridge Project, the fee is contingent on production, and is approximately 2 percent of the first 2,500,000 barrels. He did not know what the license fee was for the license to Gilbert Shale Oil.

Cathedral Bluffs

Mr. Richard Keegan, Project Officer, briefed the Board on the history of the Cathedral Bluffs Project before the Corporation. In July 1983, the Corporation signed a $2.19 billion Letter of Intent with the Cathedral Bluffs sponsors, Occidental Petroleum and Tenneco Corporation. That Letter of Intent was for a 14,100 barrel per day plant in Colorado incorporating Modified In-Situ (MIS) and above ground retorting technologies. Various factors have combined to prevent the Project from coming to fruition, including the inability of the Union B retort to function, congressional action on the Corporation's funding authority, and the absence of a quorum of the Board for much of 1984. In October 1985, Occidental Petroleum acquired an option to buy Tenneco's share of the Cathedral Bluffs Project, and on November 6, 1985, Occidental set forth a phased approach for purchase of the Tenneco share. The Project has submitted a new proposal to the Corporation that contains two options, neither of which includes a surface retort or an upgrader; instead, the Project would be restricted to producing raw shale oil using the MIS retort technology. Mr. Keegan stated that the Corporation staff had met with Occidental, and would cover those discussions in more detail during the closed session. Mr. Corcoran asked if omission of the upgrader and the surface retort made the Cathedral Bluffs Project programmatically deficient. Mr. Keegan said that the omissions resulted in a substantially scaled down Project which Occidental believes is more responsive to the Corporation's new program as stated in the Phase I Business Plan. If the initial program is a success, a surface retort could be included in a second phase of the Project.

Northern Peat

Mr. Ralph Bayrer, Vice President-Projects, reported that the Board has systematically been addressing the Letter of Intent projects, focusing on the priority coal and oil shale resource areas. The Board was scheduled to discuss the Northern Peat Project in March 1985, but the Project requested a delay in order to undertake additional work in three areas. First, they wished to perform harvesting, pulping, and pumping tests on the Sunkhase and Chemobogs, on which the Project is located, to confirm project design data. Secondly, the sponsors wished to perform further analysis and to evaluate data bearing on the assessment of the Project's environmental impact. Thirdly, the sponsors wished to review Project economics since the development of the term sheet in 1984. The Corporation staff now recommends that, in the interest of expeditiously dealing with the remaining projects before the Corporation, the Board establish a deadline prior to the December Board meeting, scheduled for December 17, for the Northern Peat Project to demonstrate further that all significant open issues have sufficiently been addressed such that the project can move ahead with the likelihood of success. Mr. Reichl stated that voting for such a resolution would not in any way indicate a decision on the Project. He stated that he had serious reservations about the relevance of the Northern Peat Project to the Corporation's current program.

On a motion duly made by Mr. Schroeder, and seconded by Mr. Corcoran, it was unanimously

> RESOLVED, that the Northern Peat Project be given until December 13, 1985 to demonstrate continued sponsor commitment and resolution of issues regarding project design data, analyses bearing on environmental impact documents, and an updated review of project economics.

Great Plains

Mr. Bayrer reported that the staff had no further comment to add to the Chairman's earlier statement about the Great Plains Project. Mr. MacAvoy said that he had received copies of a memorandum from Mr. James Groelinger, Vice President-Finance and Treasurer, dated November 12, 1985 on the Great Plains Project, that contained a very interesting set of reports from the Rand Corporation and Argonne National Laboratories. He asked if further follow-on work were planned to evaluate the Great Plains Project or if these reports represented the end of the Corporation's analysis. Mr. Groelinger replied that the Corporation did not have plans for any further analyses, although if the Board deemed it appropriate, he thought the Corporation would be in a position to do so. Mr. Groelinger stated further that the work described in his memo was not follow-on work, but was actually work that was commenced when the Corporation was in negotiations with the Great Plains Project. When the Corporation's deal with the Project fell through, the authors of the evaluations were relieved of severe time pressure, and they were able to conclude those reports within a normal schedule rather than on an accelerated basis. Mr. MacAvoy noted that the Rand Corporation laid out a methodology for evaluating the economic impact of projects. He asked if Rand were prepared to use the methodology in studying other projects. Mr. Groelinger replied that he presumed that Rand would certainly be willing to discuss such additional analyses. In response to Mr. Schroeder, Mr. Groelinger said that both the Argonne and Rand reports were commissioned by the Corporation.

Discussion of the Paraho-Ute Project

Mr. Hill noted that the Paraho-Ute Project is the only Project remaining under the Third Solicitation without a signed Letter of Intent. Although the financial terms of an assistance award were negotiated in early 1984, the Board took no action on the project at that time due to some uncertainty as to the eventual makeup of the sponsoring consortium. In the spring of 1985, following the Board's adoption of the Statement of Objectives and Principles and the Phase I Business Plan, the project submitted an outline of a plan to downsize the facility from 14,100 barrels per day to 4,500 barrels per day, with Allied-Signal Corporation providing all the equity. The Board was briefed on the Project's status on May 21, 1985, but no action was taken at that time. Following that meeting, in early June, the project was advised that, while the downsized project was compatible with the Corporation's Business Plan, the Corporation was not prepared to enter into negotiations at that time. Mr. Hill stated that it does not appear that any further development has been undertaken by Allied-Signal since early June. To resolve the Project's status under the Third Solicitation, the Board could establish definitive milestones for the Project to demonstrate its readiness to enter negotiations by showing appropriate downsized project structure and status with respect to plant definition, capital and operating cost estimates, marketing plan, availability of sites and feedstock, rights to technology, an appropriate degree of equity commitment and an appropriate level of associated project management. Mr. Noble noted that the Paraho-Ute Project has been inactive for some time, and now was the proper time for the Project to "get their ducks in a row." Mr. MacAvoy noted a sentence in the staff's document, "Status Report on the Paraho-Ute Project," which stated: "In early November 1985 phone conversations with the staff, a Signal representative indicated that it may no longer be interested in pursuing all of the Paraho-Ute, Northern Peat and Keystone Projects...." Mr. MacAvoy stated that, in return for voting on the Paraho-Ute resolution, he hoped that the staff could change the tentative word "may" and replace it with "is not" or "is." He said such a statement should be obtained from Allied-Signal. Mr. Corcoran stated that he shared Mr. MacAvoy's sentiments.

On a motion duly made by Mr. Corcoran and seconded by Mr. Reichl, it was unanimously

> RESOLVED, that the Paraho-Ute Project be given until December 13, 1985 to demonstrate satisfactory structure and status with respect to a downscaled project including plant definition, capital and operating cost estimates, equity commitment and project management, marketing plan and product revenues, availability of sites and feedstock, rights to technology and permitting, authorizations and approvals and compliance of the downscaled proposal with the requirements of the Third General Solicitation.

Tar Sands Solicitation

Mr. Bayrer reported that the Tar Sands Solicitation was designed to allow the Corporation to evaluate projects against qualification criteria of two kinds. The first set of criteria embodies pass/fail minimum requirements. A project applying under the Tar Sand Solicitation must show that it can meet these minimum criteria, involving project eligibility under the Act and under the Solicitation, a demonstration that the project has achieved a level of design of at least Level II, a project cost estimate consistent with that Level II design, availability of rights to key technologies, availability of project site, availability of eligible feedstock and water, and availability of permits within a realistic timetable. Secondly, beyond the pass/fail criteria, this solicitation contains a series of ranking criteria. Mr. Bayrer noted the Tar Sand Solicitation is the first solicitation which has indicated that projects would be ranked at the Qualification stage if the Board so desired. The ranking criteria cover the areas of technology and engineering, environment, socioeconomic value, sponsorship and finance, management, cost estimate, markets, and relation to programmatic elements specified in the Statement of Objectives and Principles and the Phase I Business Plan. If a project were very weak in any one of these areas, the Board could so note, and that would be grounds for dropping the project.

Mr. Bayrer reported that two proposals solicited under the Tar Sands Solicitation were found to be unresponsive, the International Hydrocarbons Project and the Chemech Project. He reported that the staff had found that the International Hydrocarbons Project failed to provide evidence to demonstrate a Level II design or cost estimate, submit information on environmental effects, identify the necessary permits, indicate equity commitment to the Project, or include an analysis of the Project's financial viability or evidence of capable and experienced Project management. On that basis, the staff recommended that the International Hydrocarbons Project be eliminated from further consideration. The staff found that the Chemech proposal did not contain sufficient information to determine whether the Project met the qualification criteria. Specifically, Chemech provided insufficient evidence of a Level II design or corresponding cost estimate, insufficient information in regard to environmental effects and permitting, and inadequate information regarding key financial data. Furthermore, the Project failed to provide evidence of capable and experienced project management, financial capability or economic viability. On that basis, the staff recommends that the Chemech Project also be eliminated.

On a motion duly made by Mr. Corcoran and seconded by Mr. MacAvoy, it was unanimously

> RESOLVED, that the International Hydrocarbons Sunnyside Tar Sands Project did not submit sufficient data to permit the Corporation to assess its project proposal under the solicitation for projects to produce synthetic fuels by mining and surface processing tar sands, and it hereby disqualified and eliminated from further consideration under such solicitation.

On a motion duly made by Mr. Corcoran and seconded by Mr. MacAvoy, it was unanimously

> RESOLVED, that the Chemech Project did not submit sufficient data to permit the Corporation to assess its project proposal under the solicitation for projects to produce synthetic fuels by mining and surface processing tar sands, and it hereby disqualified and eliminated from further consideration under such solicitation.

The Board deferred further consideration of the Tar Sands Solicitation to the closed session.

Eastern Coal Solicitation

Mr. Bayrer reported that the Eastern Coal Solicitation contains three competitive categories based on gasification technology: fixed-bed slagger, fluidized-bed, and entrained flow. The closing date for Qualification Proposals in the fixed-bed slagger gasification category was November 15, 1985. The Corporation originally received Pre-Qualification Statements from five projects; only the Virginia Power Project actually submitted a Qualification Proposal. That Project is sponsored by Virginia Power, EPRI, Consolidation Coal Company, Bechtel Power Corporation and the Slagging Gasification Consortium (British Gas Corporation, BOC Group, Babcock Woodall-Duckham). It would be located at Virginia Power's Chesterfield power station on the James River, south of Richmond. The technology to be used is the British Gas Corporation's fixed-bed slagger. The size of the Project would be approximately 6,000 BOED medium-Btu fuel gas, to be used to produce 187 megawatts of electric power.

The Corporation received Qualification Proposals in the other two categories in September, and the staff has completed evaluation of those proposals. The Eastern Coal Solicitation does not involve a ranking of projects at the Qualification Proposal stage. The Solicitation requires a cost estimate of at least plus or minus 30 percent. That fairly stringent requirement was set forth in the Solicitation in order for the Corporation to determine what the maximum probable capital and operating costs of each project would be. Other criteria include the adequacy and capability of each sponsor to raise its share of sponsor capital necessary to execute and operate the project and whether identified sponsors demonstrate sufficient collective financial capability to provide at least 50 percent of the estimated equity in the sponsors' capital requirements. The adequacy of the sponsors' ability to obtain additional equity for sponsor capital and the economic viability of the project are also examined. Management criteria involve adequacy of the capability and experience of the sponsors and other key participating organizations and of key personnel to execute and operate the project, and whether the management structure and procedures are adequate. In the technology and engineering area, the criteria relate to whether the rights to technology can be secured, and whether the status of the project's technology and engineering is adequate to provide a sound design basis to meet the project's schedule. In the area of site and resources, the criteria concern whether the site has been secured and the socioeconomic and environmental impact of the proposed project.

In the fluidized-bed gasification category, the staff has concluded that the Keystone and COGA-1 Projects meet all of the Qualification Criteria. The Keystone Project is also under consideration in the Fourth General Solicitation, and involves production of medium-Btu fuel gas using the KRW fluid-bed gasification process. The fuel gas would then be used to generate electricity. The COGA-1 Project has proposed to use a U-gas process developed by the Institute of Gas Technology. The COGA-1 Project will produce ammonia at a rate of 13,771 BOED.

In response to Mr. Reichl, Mr. Bayrer stated that the equity for the Keystone Project is completely subscribed, and the COGA-1 Project is subscribed to over 50 percent. The staff recommends that both Projects be admitted to negotiations with a milestone to be set for development of key terms by January 31, 1986. COGA-1 will have to complete their subscription of equity during that period. The COGA-1 Project sponsors have indicated to the staff that if the Project is found qualified by the Board, they will be able to complete their equity subscription fairly rapidly.

Mr. Bayrer noted that the Eastern Coal Solicitation contemplated two lines of action. One line would require a second and more detailed Project Proposal containing a complete Level II/III design and corresponding cost estimate, to be submitted by March 14, 1986. The other line of action is to proceed directly to negotiation with all qualified projects at the time of qualification; the staff recommended that this line of action be followed.

Mr. Bayrer stated that a third Project, the Ohio-1 Project, also applied in the fluidized-bed category of the Eastern Coal Solicitation. The Board granted Ohio-1 an extension of time with prejudice to November 12, 1985 to provide all the information required by the Solicitation and the Qualification Proposal. The Project submitted additional information by November 12, but the staff believes that the Project has failed to provide sufficient information in a number of required areas, including sponsors' financial capability, project financing, project economic viability, operating cost data, and data on environment, site and project management. Mr. Bayrer stated that the staff believes that a meaningful evaluation of the Project cannot be made given the limited degree of information supplied.

On a motion duly made by Mr. Schroeder and seconded by Mr. Reichl, on a vote of 4-0 (Mr. Corcoran in abstention), it was

> RESOLVED, that the Ohio-1 Project be, and it hereby is, designated as not meeting the Qualification Criteria of the Solicitation for Eastern Province or Eastern Region of the Interior Province Bituminous Coal Gasification Projects in the Fluidized-Bed Gasification Technology Category and eliminated from further consideration under such Solicitation.

On a motion duly made by Mr. Reichl and seconded by Mr. MacAvoy, on a vote of 4-0 (Mr. Corcoran in abstention), it was

> RESOLVED, that the Keystone Project be and it hereby is, designated as meeting the Qualification Criteria of the Solicitation for Eastern Province or Eastern Region of the Interior Province Bituminous Coal Gasification Projects in the Fluidized-Bed Gasification Technology Category.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Schroeder, on a vote of 4-0 (Mr. Corcoran in abstention), it was

> RESOLVED, that the COGA-1 Project be and it hereby is, designated as meeting the Qualification Criteria of the Solicitation for Eastern Province or Eastern Region of the Interior Province Bituminous Coal Gasification Projects in the Fluidized-Bed Gasification Technology Category.

On a motion duly made by Mr. Schroeder and seconded by Mr. Reichl, on a vote of 4-0 (Mr. Corcoran in abstention), it was

> RESOLVED, that, in accordance with Section 5.3 of the Solicitation for Eastern Province or Eastern Region of the Interior Province Bituminous Coal Gasification Projects, the Board hereby authorizes competitive negotiations for the Fluidized-Bed Gasification Technology Category of such Solicitation and directs that the staff proceed to negotiate with each of the projects which the Board has designated as meeting the Qualification Criteria in accordance with Section 7 of such Solicitation;
>
> and RESOLVED further, that the staff is directed to present negotiated key financial terms for such project and evaluation of such projects against the Evaluation Criteria and the Programmatic Criteria on or before January 31, 1986.

Mr. Corcoran explained that he had chosen to abstain on votes involving the fluidized-bed gasification technology because of his potential involvement in the Illinois Senate race. Mr. Corcoran stated that he had no financial interest in any of the projects, but because the COGA-1 Project is to be located in Illinois, it might appear to the public that he had a political interest.

Mr. Bayrer turned to the entrained-flow category of the Eastern Coal Solicitation. He noted that the Scrubgrass Project had met the criteria in most of the evaluation categories, but in three important areas it did not.

The cost estimate was not accurate to plus or minus 30 percent, the ability of the management team to supervise design and construction of a Project of this magnitude was not demonstrated, and the status of the technology and engineering was not adequate to provide a sound design basis demonstrating that the schedule could be met. On those grounds, Mr. Bayrer reported that the staff did not find that the project met the requirements of the Solicitation.

One other proposal was received in the entrained-flow category, from the Davis Synthine Project. Mr. Bayrer reported that the staff had found the Davis Synthine Project to be ineligible under the Solicitation because the Solicitation requires pressurized gasifiers at a minimum pressure of 10 atmospheres absolute. Since the Davis Synthine Project proposed a KBW gasifier that operates at atmospheric pressure rather than at the minimum 10 atmospheres absolute, it is not an eligible Project under the Solicitation. In addition, the Project's proposal was incomplete and non-responsive in most areas. No equity sponsors were identified, and no representative management or technical entity is involved in the Project.

On a motion duly made by Mr. Corcoran and seconded by Mr. Reichl, it was unanimously

> RESOLVED, that the Davis Synthine Project be, and it hereby is, disqualified and eliminated from further consideration under the Solicitation for Eastern Province or Eastern Region of the Interior Province Bituminous Coal Gasification Projects for its failure to propose a technology meeting the pressure specifications required by Section 1.2 of such Solicitation.

Mr. Reichl stated that he was sad to see that the staff had been forced to conclude that the Scrubgrass Project did not meet the requirements of the Solicitation. He noted that the technology proposed by the Scrubgrass Project is in tune with the Corporation's program. He stated that the Scrubgrass Project had been sponsored by a set of companies which ought to have been able to meet the equity requirements. He noted, however, that the same generic technology is being pursued vigorously by the private sector.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the Scrubgrass Project be, and it hereby is, designated as not meeting the Qualification Criteria of the Solicitation for Eastern Province or Eastern Region of the Interior Province Bituminous Coal Gasification Projects in the Entrained-Flow Gasification Category and eliminated from further consideration under such Solicitation.

Further Consideration of Summary of the August 13 Board Discussions

Mr. MacAvoy noted that when the Board had discussed the August 13 matter earlier in the meeting, the Board had looked at two resolutions. He noted that the Board had voted only on the first one. Mr. Schroeder stated that Mr. MacAvoy was correct, but as he understood the situation, the Board's failure to pass the first resolution eliminated the need to vote on the second resolution. Mr. MacAvoy stated that he was prepared to make a motion on the second resolution and vote in favor of that resolution. Mr. Reichl asked the Secretary to summarize the Board's actions to that point. Mr. Rawicz stated that the second resolution dealt with releasing the summary of the August 13 discussion, while the first would have approved the summary as an official record of a meeting of the Board. Mr. Rawicz explained that the Board could release the summary without passing the first resolution.

On a motion duly made by Mr. MacAvoy and seconded by Mr. Schroeder, it was unanimously

> RESOLVED, that the summary of informal discussions held on August 13, 1985 among four members of the Corporation's Board of Directors, prepared by Mr. March Coleman after consultation with members of the Board, be, and it hereby is, approved and authorized for release to the public.

Closing the Meeting

On a motion duly made by Mr. Corcoran and seconded by Mr. MacAvoy, it was unanimously

> RESOLVED, that the portions of this meeting consisting of Agenda Item VII (Establishment of Milestones for Fourth General Solicitation Projects), Agenda Item VIII (Status Review of Outstanding Letter of Intent Projects), Agenda Item IX (Status Report on Union Project (Loan Guarantee)) and Agenda Item X (Ranking of Projects under the Tar Sands Solicitation) be, and they hereby are, closed to public observation, it having been determined by the Board of Directors in open session that those portions of the Board's deliberations should properly be considered in closed session pursuant to Section 116(f)(1) of the Energy Security Act.

The open session of the meeting was adjourned at 12:50 p.m.

Closed Portion of the Meeting

That portion of the November 19 meeting of the Board of Directors of the United States Synthetic Fuels Corporation, closed pursuant to a motion duly made, seconded and unanimously adopted in Open Session, was called to order at 2:10 p.m. by Chairman Edward E. Noble in Room 403, 2121 K Street, N.W., Washington, D.C. In addition to the Chairman, the following members of the Board of Directors of the Corporation, constituting a quorum of the Board, were present:

Thomas J. Corcoran
Paul W. MacAvoy
Eric H. Reichl
Victor A. Schroeder

The following officers and employees of the Corporation were also present:

Leonard C. Axelrod, Vice President-Technology & Engineering
Ralph L. Bayrer, Vice President-Projects
Charles A. Cowan, Jr., Senior Vice President-Projects
James F. Groelinger, Vice President-Finance and Treasurer
Russell F. Miller, Deputy Inspector General
Leonard Rawicz, Vice President, General Counsel and Secretary
Theodore D. Atwood, Project Officer
Frank R. Hill, Director, Finance
Karen B. Hutchison, Director-Media Relations
Richard J. Keegan, Project Officer
Jeanine L. Matte, Assistant General Counsel-Project Finance (Negotiation and Documentation)
Betty A. Nolan, Executive Assistant to the Chairman
Kathryn L. Peyton, Assistant to the Secretary
Chester R. Shields, Senior Attorney
Philipp von Turk, Assistant General Counsel-Project Finance (Contract Administration)

Fourth General Solicitation

Mr. Bayrer reported that three Projects remain in consideration under the Fourth General Solicitation: ASC/Indiana, Keystone and Utah Methanol. Keystone and Utah Methanol met the first milestone, July 16, 1985, for full commitment of equity. An extension was granted by the Board with prejudice until October 15, 1985 for the ASC/Indiana Project to meet the equity deadline. In her November 12, 1985 memorandum, Skila Harris, Project Officer, reported that the ASC/Indiana Project has made some progress toward that goal but still lacks 100 percent of the required equity and has requested a further (indefinite) extension of time to complete its equity. The Project has raised approximately from participants and suppliers of the Project, which represents about two-thirds of the equity requirement. Mr. Bayrer stated that the staff was not confident that ASC/Indiana would be successful in reaching their goal, and recommended that the Board drop the Project from further consideration. Mr. Rawicz stated that the Board had two alternatives, to drop the Project or to give the sponsors more time to complete their equity. Mr. Corcoran stated that he recommended the second option, as the Board had yet to act on the Seep Ridge Project. He suggested that the Board not drop the ASC/Indiana Project until the Seep Ridge questions are resolved. Such an extension would give the ASC/Indiana Project more time to complete its equity, with prejudice. He suggested that the Board could give the sponsors another definite milestone for completion of equity rather than granting them an indefinite extension. He suggested that an additional 60-day time frame would afford the Board an opportunity to come to some resolution on the Seep Ridge Project and would give ASC/Indiana more time. Mr. Schroeder asked what progress the Project had made in assembling equity during the first extension. Mr. Bayrer replied that ASC/Indiana Project had been able to add an additional $25 million in equity between July 16 and October 15. Mr. Reichl asked what mechanism the project sponsors were using to assemble equity. Mr. Axelrod replied that the sponsors have said they are looking very hard at all possibilities. Mr. Bayrer added that the Corporation had recently received a communication from Lloyds International Corporation, a merchant bank, which made general statements that the sponsors were working to arrange financing but made no real commitment. Mr. Reichl suggested that the Board should set a definite date for completion of equity. Mr. Cowan suggested that the Board use the January 31, 1986 date being used in the Eastern Coal Solicitation projects. Mr. Reichl agreed with Mr. Cowan, and noted that the Petrosix retort being proposed by the ASC/Indiana Project is the only oil shale retort before the Corporation other than the Union B retort. He said that he was interested in the Project and thought they deserved a short extension of the deadline to complete their equity.

On a motion duly made by Mr. Corcoran and seconded by Mr. Reichl, it was unanimously

> RESOLVED, that the American Syncrude/Indiana Shale Oil Project be granted an extension to meet the milestone established by the Board for such solicitation that 100% of required equity be committed to the Project by July 16, 1985, provided that 100% of required equity is committed to the Project no later than January 31, 1986, and provided further that review, evaluation and selection of projects under such Solicitation shall not be delayed or otherwise affected by this action even if the Project is thereby disadvantaged in competition under the Solicitation.

Mr. Bayrer noted that the Board had expressed its concern at the October 16, 1985 meeting that the Keystone Project was too expensive. The Keystone sponsor, Allied-Signal Corporation, looked for ways to reduce the amount of obligational authority required and came up with a proposal to lower the obligational authority by approximately $170 million, based on elimination of the spare gasifier, a reduction of operating costs and a restructured debt/equity ratio.

Utah Methanol Project has proposed to move its site to the Chevron site and to change its product from methanol to a mixed alcohol synthesis. The sponsors have done extensive engineering to get their design up to Level II/III at the new site. Mr. Bayrer said that the staff believes that the Project's engineering design is sufficient to continue negotiations. In addition, he noted that CE/Lummus is no longer a contractor to the Project and that Chevron remains interested in negotiating the sale of the proposed site to Utah Methanol.

Mr. Bayrer referred to the staff's September 9, 1985 document "Total Assistance Summary," which included specific data on assistance packages for the Utah Methanol and Keystone Projects. He noted that the chart did not include the latest Keystone numbers, and that the numbers in the chart were numbers from the sponsor, not from the Corporation's staff. Mr. Bayrer stated that the staff has proposed a milestone whereby the Utah Methanol and Keystone Projects would reach final terms and conditions by January 31, 1986, at which point the Board could select one, both, or neither project for further consideration.

(General S. K. Lessey, Jr., Inspector General, joined the meeting.)

Mr. Reichl noted that the January 31 date proposed by Mr. Bayrer was the same date the Board had discussed for the Eastern Coal Solicitation in the Open Session. Mr. Bayrer replied that the staff had attempted to have COGA-1 come up under the Eastern Coal Solicitation on the same date that Keystone would come up under both the Eastern Coal Solicitation and the Fourth General Solicitation. The Board could then look at financial assistance requirements for the two Projects at the same time.

Mr. Reichl stated that he was comforted to see that there was flexibility in the Keystone numbers, although the total assistance package is still proportionately larger than the other Corporation deals with similar projects. He noted that the Project was still considering financial protection of its electric power plant investment as part of the risk to be alleviated by Corporation assistance. He asked what guidance the staff wished from the Board. Mr. Cowan replied that the staff would like to be able to say that the Board was greatly concerned over the amount of assistance required, particularly concerning the matter of a financial return on the power block. He stated that he preferred having a date deadline rather than a monetary limit for negotiation purposes. Mr. Reichl stated that he would like to do whatever is most helpful to the staff. Mr. Groelinger stated that Allied-Signal has expressed a willingness to readdress the power block issue, but the staff would certainly reinforce the Board's concern. Mr. Reichl stated that it was untenable for the Keystone sponsor to argue that they could not continue to run their power plant if the gasifier did not work. He stated that gas was in plentiful supply, and the price was down. He stated that the power block is a safe investment, and it is unreasonable for Allied-Signal to expect that the Board would think differently. He added that the Keystone Project is technically a good project.

Mr. Schroeder asked if electricity was needed in that grid area. Mr. Atwood stated that General Public Utilities (GPU) might not purchase power from the Project if they do not gasify coal. Mr. Schroeder noted that GPU and Allegheny Power would be willing to buy power produced from a gasifier because the Corporation would be subsidizing the cost. He stated that underwriting the power block should not be part of the assistance package. Mr. Atwood replied that elimination of the power block would certainly fit with the intent of the ESA. Mr. Cowan said that the new milestone and the instruction to eliminate the power block from the negotiation would get Allied-Signal's attention. Mr. Noble stated that the Project would still require a high level of assistance. There was a Sense of the Board that the staff should notify the sponsor of the Keystone Project of the Board's desire to eliminate consideration of the power block from negotiations.

On a motion duly made by Mr. Corcoran and seconded by Mr. MacAvoy, it was unanimously

> RESOLVED, that the milestones established by the Board at its May 21, 1985 meeting for consideration of pending Qualified Projects under the Fourth General Solicitation be amended as follows:
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> | | |
> |---|---|
> | Completion of key terms, and evaluation against the Corporation's Statement of Objectives and Principles and criteria in the Solicitation | January 31, 1986 |

(Mr. Corcoran left the meeting.)

Cathedral Bluffs Project

Mr. Keegan reported that on November 6, 1985, Occidental Petroleum submitted a proposal for a downsized Cathedral Bluffs Project with two program Options. Option I is an MIS Project operating over a period of six years to produce approximately four million barrels of shale oil from a total of 22 retorts, burning three MIS retorts at a time to produce 2,250 barrels per day. The financial assistance for Option I would include loan guarantees and price guarantees, with a $320 million guaranteed loan and a new Occidental equity contribution of $15 million. The loan guarantee would roll over into price guarantees, with maximum Corporation exposure of $700 million. The price guarantee would be front-loaded, beginning at about $225 per barrel and reducing to about $80 per barrel. (Mr. Corcoran re-joined the meeting.) Mr. Keegan stated that Option II is essentially the same technical program, but presents some difficulties to the Corporation's legal staff. In the beginning phase of this Option, Occidental and the Corporation, in a joint venture, would operate one initial MIS retort and would then operate two MIS retorts simultaneously for a total of seven MIS retorts in the joint venture. Assuming successful results, the joint venture would convert to a synthetic fuel project comprising three simultaneously operating MIS retorts. The first phase would be considered a Project Module, which must be smaller than a Project, in accordance with the ESA. The Corporation contribution under Option II wpuld be 100 percent of the new capital costs, up to 60 percent of the total Project costs, not to exceed $350 million during the Module stage. The second phase, when the Module is upgraded to a Project, would consist of a straight price guarantee, for a total program of 19 MIS retorts producing about 3.5 million barrels of raw shale oil, at a daily rate of 2,250 barrels from three simultaneously operating retorts. Price guarantees under Option II would total $200 million, in addition to the $350 million invested in the joint venture, for a total Corporation commitment of $550 million. Under Option II, the price guarantee would be set at $85 per barrel. Mr. Keegan pointed out that in Option II, approximately $150 million in interest would be saved over Option I. Occidental considers Option II, with a $550 million price tag, to be more attractive because of the Corporation's reduced exposure.

Mr. Keegan noted that the Legal Services Group has identified several legal issues which complicate Option II, however, such as defining the difference between a Project Module and a Project. Also, the ESA requires that, in order to enter into a joint venture, the Board must make a finding that conventional price/loan guarantees are not adequate to support the Project. In this case that may be a very difficult finding to make. Furthermore, there is also a question whether either of the options represents a substantially similar Project to the one outlined by the outstanding Letter of Intent. Technically, the Project also has a problem in that the duration of Project operations is set for a little over six years. The Corporation's Board must decide whether six years is long enough to gain learning benefits from the Project. Mr. Corcoran stated that the Cathedral Bluffs sponsors have a tremendous amount of sunk costs, and are asking for credit of for "up-front sunk equity." They realize that this causes difficulties for the Board. Mr. Keegan thought that the sunk costs figure would be negotiable within certain parameters, but said the sponsor does not appear willing to put up new equity. The two options were proposed by Occidental in response to the the new groundrules stated in the Phase I Business Plan and the Statement of Objectives and Principles, in an effort to structure an MIS Project attractive to the Board.

Mr. Keegan stated that the staff had tried to ascertain what would be Occidental's optimal project. Occidental has suggested that they would prefer a 10,000 bpd Project costing slightly over $1 billion, with a non-Union above-ground retort and an upgrader. The sponsors realize that the Corporation will have problems with various aspects of the two Options, including the short duration of each Option, the concept of a joint venture which matures into a Project, and the amount of credit proposed for sunk equity. Mr. Keegan stated that he believed the Occidental negotiators were working under rather severe constraints from Occidental management.

Mr. Schroeder asked how Occidental would compensate Tenneco for its interest in the Project. Mr. Keegan replied that Tenneco would receive $5 million at the time the Corporation executed an agreement with Occidental, after which Occidental would have up to two years to pay off another $65 million. (Mr. Noble left the meeting.) Mr. Corcoran asked what amount of additional equity Occidental would be committing under the two Options.

Mr. Keegan replied that Occidental would be adding $15 million under Option I and $43 million under Option II. Most of the new equity would be used for construction. Mr. Corcoran said that he would like to urge the Project sponsor to commit more new equity to the Project, so that there would be more sharing between Occidental and the Corporation. Mr. Groelinger stated that the equity is a very important issue, but a broader issue is whether either of the Options is attractive to the Corporation. Mr. Reichl asked what the risk would be if the Corporation proceeded with Option I and it became obvious after operating the first two retorts that the Project was of no great interest. He thought that most of the price guarantee expenditures would not have been made. Mr. Groelinger replied that the Corporation would not have incurred much exposure from price guarantees, but would have incurred a substantial portion of the exposure resulting from the loan guarantee. Mr. Hill said that almost all of the capital under the loan guarantee would be invested at that point. (Mr. Shields left the meeting.)

Mr. Schroeder stated that he did not understand how three simultaneously burning MIS retorts constituted a Project and less than three retorts was a Project Module. Mr. Keegan stated that he believed Occidental was trying to offer the Corporation a basis for a joint venture partnership and that they had rather arbitrarily arrived at those numbers. Mr. Rawicz stated that he believed there was a technical explanation for the difference.

Mr. Reichl asked if all of the potential resource was under a 1,000 foot overburden. Mr. Axelrod stated that it was. (Mr. Noble re-joined the meeting.) Mr. Axelrod disagreed with Mr. Reichl's view that the lease was very unfortunate; Mr. Axelrod said that it was a very fortunate lease because most of the 300-400 billion barrels of resource in the Piceance Basin are located in a position similar to the Cathedral Bluffs resource, in the middle of the mesa rather than on the edge. Mr. Reichl stated that it is obviously a very unattractive Project because it is too expensive and not economically attractive. He stated that the one thing in the Project's favor is that it opens up part of the oil shale resource which, presumably, mining cannot reach, but he was not sure that was accurate. He stated that it looks as if the resource can be produced without using the MIS technology, and if that is true, the Project is not attractive.

Mr. Schroeder asked what the market would be for raw shale oil. Mr. Hill stated that it was quite clear that if Union were operating at anything less than full capacity, the Cathedral Bluffs Project would be able to have their product toll-processed at Union's upgrader. That is Occidental's first choice. They are also looking, as an alternative, at a boiler-fuel mixer. Mr. Schroeder commented that the Project was looking at a substantial operating cost for mining shale that would not be retorted, and asked what percentage that would work out to be. Mr. Axelrod replied that, of the 3.5 million barrels to be produced by the Project, there will be 4 million tons of retortable shale removed from the mine that would not be retorted. In the meantime, Occidental is willing to provide a site for anyone wishing to pursue pilot scale work on above-ground retorts.

(Mr. Shields re-joined the meeting.) Mr. Reichl stated that he thought that the MIS technology was uniquely expensive to develop. Mr. Corcoran replied that the whole point of the Corporation's program is to look at various technologies for extracting oil from shale. He stated that if the Corporation wished to know if there would ever be an attractive return on MIS technology, the Corporation would have to start with small steps, and for that reason, aside from economics, it seemed to him that it made sense to try to fashion some sort of MIS project. Mr. Reichl stated that, in fairness to the Project sponsor, the Corporation had asked them to downsize the Project and they had responded to that request. He noted that the new proposal reconfirms that MIS is a very costly technology. He stated that he felt somewhat constrained by the overall position of the Corporation, in that if the Corporation has a limited budget, he would not consider that the Cathedral Bluffs Project would be a wise Project to pursue.

Mr. MacAvoy asked if the staff could generate any benefits from the Cathedral Bluffs Project with optimistic estimates of technical progress using the methodology described in the Corporation's Comprehensive Strategy. He suspected that the Project was starting from such a negative position that there would be no way to generate such benefits. Mr. Axelrod replied that he did not think that anybody had run such a calculation. He reminded the Board that the Project would be mining 4 million tons of shale which would not be retorted, but which would already be paid for when the Project expands to include an above-ground retort. Mr. Axelrod acknowledged that deep mining is very expensive, but once the shale is out of the mine, it could be processed in an above-ground retort and the Project would become much less expensive. He stated that he did not believe that anyone had looked at a real scenario for the type of calculations which Dr. MacAvoy suggested. Mr. Reichl stated that, in any case, the Project was very expensive, but that if he had a great deal of money, he would certainly want to pursue it.

Mr. Noble reiterated that the Corporation had asked Occidental to propose a smaller Project, which Occidental had done by providing the two Options. Mr. Noble stated that it was not clear to him why a Project could be considered at commercial scale with three MIS retorts, but not with two, when both would basically produce the same learning experience. He stated that as much as he hated to think about a joint venture, he was not sure that he could think of any other way to pursue this Project. He suggested that Occidental take another look at their sunk costs and that the Board should tell the Project that they have to add more equity before the Board can consider the Project. He suggested that the Board give the Project 30 to 60 days to renegotiate a more acceptable solution. (Mr. Atwood left the meeting.)

Mr. Reichl asked, if the Corporation assumed zero sunk costs, what impact that would have on the Project's cost to the Corporation. Mr. Hill stated that the question was not a matter of going back and spending a great deal of time looking at sunk costs from an accounting point of view; instead, the Corporation should negotiate from a business viewpoint on the level of equity to be contributed. The two issues are separate. (Mr. Atwood re-joined the meeting.) Mr. Reichl said that was a good approach, but sunk costs are sunk costs. He said it was not clear from the numbers presented by the staff how much of the cost is capital investment and how much is operating cost, but he thought that it would be something like $150-200 million. Mr. Hill stated that he believed Occidental's initial cost to open the mine and to provide related surface facilities would be about . Mr. Reichl stated that if the Corporation were to share that expense equally with the Project, the Corporation's share would be approximately He said that a $200 million contribution on the Corporation's part would be very generous, and that the Corporation would be at risk for no more than that amount of money. If the Project does not perform adequately, the Corporation could shut it down and walk away with a $200 million loss. Mr. Groelinger asked if it were not true that any endeavor the Corporation undertakes is premised on a judgment that there is economic merit in a Project, whether or not it works well. Mr. Reichl agreed, but he said he had seen enough numbers to indicate that, unless the mining and retorting costs are less than now foreseen, the Project will not be very attractive. He stated that the sponsor may have overestimated the Project's cost given their limited experience, and it may be true that, by running three or more retorts, they could reach the "Promised Land." Mr. Groelinger stated that the Corporation needed an analysis to show that such a scenario could actually come to pass. Mr. Reichl asked if he were thinking of some quantitative measure of the improvement in mining and retorting costs which must be realized for the Project to "pay out." Mr. Groelinger stated that he did have such an analysis in mind, and added that he would also want to see some judgment that the improvement was substantial enough so that, within a time period approximately equal to that of the Cathedral Bluffs Project, those benefits would be shown in that Project.

Mr. Bayrer stated that when the staff first ran an analysis of MIS Projects, it looked as if other surface retorts, with their added mining costs, have a cost advantage of approximately 20 percent over MIS retorts. He added that any analysis of the benefits from the Cathedral Bluffs Project would have to show if there were a timeframe sufficient to overcome that 20 percent disadvantage with added learning benefits. Mr. Groelinger stated that if such a result could not be forecast, it would seem as if the likelihood of future MIS development would be very low.

Mr. Reichl stated his opinion that the replicability of MIS technology is much less than that of surface retort systems. Mr. Groelinger stated that Mr. Reichl's opinion could be used to argue that the Corporation should work with the technology in order to help build a cadre of experienced people with knowledge of this risky technology. Mr. Reichl said it was a serious issue, since it is possible that there may never be any assurance that more than seven of every ten retorts will work. It will require years of experience to ascertain the effectiveness of the MIS technique. He said he was not sure whether enough were known to bring the technique up to the scale Occidental is proposing. Mr. Corcoran stated that the MIS technology is quite different from coal technologies, where the objective is abundant replication. Mr. Corcoran said he expected that any improvements made during operation of the Cathedral Bluffs Project would be used at that site only. He said the Corporation should proceed slowly because there is no pressure for production from this technology. He said the Corporation had plenty of time but not plenty of money, and he encouraged the Board to consider a sequential assistance arrangement. Mr. Reichl stated that the Board should not get hung up on legal issues concerning formation of a joint venture. Mr. Corcoran stated that it is very likely that Congress will modify the ESA again and that Congress is likely to look very closely at this Project. Mr. Noble suggested that the Board instruct the staff to determine whether Occidental will commit additional new equity to this Project, and if so, to structure a deal which would begin with a Project Module. Mr. Keegan said the definition of "Module" is unclear and he thought Occidental's definition for this Project might seem arbitrary. Ms. Matte said the Legal Services Group would look to the technical staff for assistance in defining what would constitute a "Module" in this context, in addition to considering the ESA. Ms. Matte noted further that the statute says the Corporation cannot participate in a joint venture agreement unless an acceptable Project cannot be negotiated using loan and price guarantees only. Ms. Matte stated that it appears it may be possible to structure a satisfactory MIS Project using the statutorily preferred methods of assistance.

Mr. Reichl suggested that the staff inform Occidental that the Board remains interested in MIS technology and that the Board members appreciate the work Occidental has done to date; however, the Project still appears to be too expensive and the Board wishes to consider alternative methods for developing the MIS technology. Mr. Reichl stated that when the Corporation's program funding becomes more certain, the Board will be better able to define its spending priorities. He said the MIS technology obviously requires more research and development work. Ms. Matte suggested that the staff could straddle factfinding between the two Options in terms of cost and technology. Mr. Groelinger said the Board should not be deceived by the appearance of a large difference between the funding required by the two Options. Mr. Axelrod then noted that most of the difference resulted from interest on a guaranteed loan in Option I. Mr. Reichl suggested that Occidental should aim toward a figure of $250 million.

Mr. MacAvoy asked if an argument could be made for Cathedral Bluffs based on the premise that Union may fail. Mr. Reichl said that if Union were to fail, he would opt for the Petrosix above-ground retort. He noted that Union has proved their mining and upgrading techniques.

Mr. Groelinger stated that he was unsure what Occidental's reaction would be to the figure proposed by Mr. Reichl. Mr. Reichl said that the Board would have to accept the risk that Occidental may decide not to pursue the Project under that option. Mr. Groelinger stated that he wanted to make sure the Board was aware of that risk, because Occidental feels they have made major progress by changing the Project from a $2 billion to a $500-700 million Project. He stated further that Occidental has explained that they strongly desire to do an 8,000-10,000 bpd Project, with an obligational authority of approximately $1 billion, using MIS technology, which would also incorporate an above-ground retort and an upgrader, and which would run for a full project life. Mr. Reichl suggested that the Board could begin with a small project of two or three retorts and, if it worked well, nothing would preclude Occidental from expanding the Project. Mr. Groelinger stated that the Board should keep in mind that the Corporation may not be around to redesign an assistance package following successful operation of a small number of retorts. The Board would have to set aside the money now for the follow-on step. Mr. Rawicz suggested that the Board could allocate a large amount, such as $500 million, but could make full funding contingent on successful operation of a few initial retorts. Mr. Reichl said that funding for Cathedral Bluffs depends on what other Projects are before the Board. He said he would not consider putting $500 million for Cathedral Bluffs ahead of the Corporation's coal program. He said Mr. Rawicz's suggestion of first burning two or three retorts and then funding the Project in steps seemed reasonable if the Corporation had the available funds. Mr. Axelrod asked if Mr. Reichl meant three single retorts or three retorts at a time for a total of 22. Mr. Reichl said he meant three single retorts. Mr. Axelrod said that he thought that Occidental would not participate in such a Project, and he did not see any point in putting in $100-200 million of above-ground facilities in order to burn three single retorts. Mr. Reichl said the staff should consult with Occidental to verify their position. He noted that a large proportion of the initial facilities would be funded by the Corporation.

Mr. Corcoran stated that the Project was significantly improved since Occidental bought Tenneco's share. He thought the two Options represented a substantial refinement of the Project's design. Mr. Corcoran stated that he did not think the Board was in a position to commit $200 or $700 million to the Project, although he thought the Corporation's funding authority would soon be clarified. He said it would be a mistake to turn down the Cathedral Bluffs Project until the Board knew how much money it had to spend. He recommended that the Board direct the negotiating team to continue their discussions with Occidental, especially on the matter of new equity, and report to the Board at its December meeting on Occidental's response. Although he did not know a great deal about MIS technology, he could see that a Project as small as three single retorts would not provide any more learning benefits than Occidental's pilot project at Logan Wash. He said it was his understanding that benefits from MIS technology result when a number of retorts are operating in coordination. Mr. Corcoran agreed that a sequential process of financial assistance was probably the best way to pursue the Project if the funding were available. Mr. Reichl added that the idea of sequential funding was key to this Project. Mr. Keegan thanked the Board for their guidance. (Mr. MacAvoy and Mr. Groelinger left the meeting.)

Seep Ridge Project

Mr. Atwood reviewed the merits of the Seep Ridge Project for the Board. He stated that the staff believes the Project has a sufficient technical data base for the effort; they have operated two retorts at almost 80 percent of design rate for almost a year. He acknowledged concern among the Board members over the Project's cost estimate, and noted that the staff had added a $20 million contingency, some of which would be used to incorporate a flue gas desulfurization unit into the project. Mr. Atwood stated that the Project has not lined up any potential customers, but in the past has sold about 100,000 barrels of raw shale oil to an Oklahoma refinery, paying approximately $7 to $8 per barrel in transportation costs. Pace Consultants, in a study commissioned by the Corporation, has identified the Pacific Northwest as a potential market. Mr. Atwood reported no controversies in the environment area. Mr. Reichl stated that he was concerned about vapor escaping during rubblization. Mr. Atwood replied that the Project has experienced no breakthroughs, although there is a potential for the gas produced to reach explosive limits. Mr. Atwood said the staff believes the water content of the gas is sufficient to meet that danger. (Mr. Noble and Ms. Nolan left the meeting.) Mr. Atwood noted a wide variation of opinion on the replicability of the Seep Ridge Project. Although the Project has replication potential in the surrounding area, that potential is not as clear for Wyoming shale and Eastern shale. The cash operating costs are approximately per barrel, compared to Union's operating costs approximately of per barrel. Mr. Atwood said the Seep Ridge Project bears out the cost advantages of in-place retorting and the technology lends itself to small projects. (Mr. Noble, Mr. MacAvoy and Ms. Nolan re-joined the meeting.)

Mr. Corcoran noted that, as the discussion in the open session had made clear, the Project does not have a clear-cut title to the site. He said the Board might wish the staff to negotiate a fair way to allocate the risk arising from the question of title, particularly because the land may not be available for mining of oil shale if title passes to the federal government. In response to Mr. Schroeder, Mr. Shields said that title insurance is not available on mineral lands in the State of Utah. (Mr. Groelinger re-joined the meeting.)

Mr. Shields said the Board should also consider the likelihood of the federal government bringing suit. In order for the Bureau of Land Management to bring suit, they would have to reverse their long-held policy of encouraging mineral development in the area. If they won the suit, the Bureau of Land Management would have to provide the State of Utah with an equivalent amount of acreage of comparable value. (Mr. Keegan left the meeting.) Both Mr. Hobbs and the Corporation's counsel believe that, at the state level, any judge hearing the case would strive to preserve the State's title, and there clearly are some strong arguments for doing so.
Mr. Shields noted that the maximum amount of guaranteed debt at risk would be $62 million in 1988.

Mr. MacAvoy suggested that the Seep Ridge deal could be restructured to eliminate loan guarantees and to increase the amount of price guarantees available sufficient to make up for the loss of guaranteed debt. Mr. Noble stated that such a step would raise the amount of assistance required to an unpalatable level. (Mr. Keegan re-joined the meeting.) Mr. MacAvoy stated that he was not convinced that a satisfactory arrangement could not be made, especially when he considered that most of the price guarantee assistance would not be paid out until the later years of the Project. Mr. Hill stated that Peter Kiewit had indicated to him in past discussions that they were not willing to accept the risk of providing 100 percent of the necessary equity financing. He added that it was ironic that, if an entity of the federal government takes action in a situation involving a private interest which results in damage to a second federal entity, the private party indemnifies the second agency. Mr. MacAvoy said that he failed to believe that the Seep Ridge Project could not assemble sufficient equity given the sort of tender offers being made in the business community. Mr. Cowan stated that the Project sponsors have said emphatically that they will not assume any more of the title risk.

Mr. Reichl asked if the sponsors had examined the possibility of obtaining another lease on land with a clear title. Mr. Shields replied that in the Uintah Basin, most the other land is either federal, state school sections or trust lands owned by the Indians. Mr. Shields noted further that any change in the site would require a major effort to obtain the necessary permits, to determine environmental impact, etc. There was a sense of the Board that the staff should discuss with the Seep Ridge sponsors alternatives for protecting the Corporation from risk due to an adverse determination with respect to the State of Utah's title to the Seep Ridge site.

Mr. Shields noted that Mr. Corcoran had expressed some concern over the tax contingency provision included in the deal, which would compensate for adverse tax law changes enacted through 1988. Mr. Corcoran had suggested previously that the 1988 date be changed to 1986. The Project, however, feels that this aspect of the agreement has already been settled. Mr. Shields requested guidance from the Board. Mr. Noble stated that he preferred 1986. Mr. Corcoran suggested that the staff could include the matter in their discussions with the Project. Mr. Hill noted that the Seep Ridge Project is more susceptible to changes in the tax law, percentage-wise, than some of the other projects before the Corporation. The Seep Ridge Project will be eligible for production tax credits beginning as soon as 1988.

Mr. Shields asked Mr. Schroeder if he had received a copy of the letter from Mr. Scott, Chairman of Peter Kiewit & Sons, expressing Kiewit's interest in the Project, and whether or not he needed additional information. Mr. Schroeder replied that he had received the letter but that it did not address his question because it talked around the issue of project replication. Mr. Shields stated that Mr. Scott had felt he only needed to respond to the question of Kiewit's interest in ongoing development in the technology area.

As for the questions concerning jurisdiction over the Project site, Mr. Shields stated that there were potential developments but nothing actually in need of discussion at that time. (Ms. Nolan, Mr. Shields and Mr. Atwood left the meeting.)

Status Report on Union Project

Mr. Keegan noted that the Union price guarantee contract signed by the Corporation at the October 16 meeting required that documentation relating to the loan guarantee be completed by December 31, 1985. Mr. Keegan stated that Union Oil had been shopping with several banks for the best rate it could find to borrow the necessary $327 million. To date, Union has received bids from four banks: Morgan Guaranty, Bank of America, Chemical Bank and Manufacturers Hanover. (Ms. Nolan re-joined the meeting.) Union is evaluating these offerings and has provided copies of the bids to the Corporation for the staff's review. Once Union has made its selection, the Corporation will be in a position to continue its attempts to consult with the Treasury Department on the agreement. Mr. Reichl asked what range of interest rates was being discussed. Mr. Hill replied that there are a number of different proposals, some with multiple options. He noted that a floating rate obligation generally had been proposed, at a rate of LIBOR plus a quarter of a percent for the first three or four years. There are also options geared to 91-day Treasury Notes and several other arrangements. Mr. Keegan reported that the most complicated agreement in the transaction is the Operating Agreement, which determines what will happen in the unlikely event the Corporation has to foreclose on the Project and take over the facility. Under the Operating Agreement, Union will agree to provide shale to the Corporation and to upgrade product from the retort. The Operating Agreement has been staffed at least once through the Corporation and is now in Union's hands. One further agreement to be completed is a Mortgage Agreement, which is being prepared with the assistance of local Colorado counsel.

Mr. Corcoran asked if the staff expected to have a final recommendation on the loan guarantee agreement for the Board at the December meeting. Mr. Keegan replied that he hoped they would. (Mr. MacAvoy left the meeting.)

Mr. Reichl asked if there were any news from Union about the Project's operational status. Mr. Axelrod replied that various members of the Corporation's staff had met with Union the previous week. One meeting took place at Brea, California, where the staff reviewed work at the Project over the last six months on the shaft cooler and work going ahead on the fluidized-bed combustor. Mr. Benjamin Wright, Director-Contract Administration, headed a Corporation delegation to a meeting in downtown Los Angeles, at the UNOCAL Headquarters. At that meeting the Corporation was advised that Mr. John Hopkins has retired and will not be replaced. The three major people working on the Union Project will now report to Mr. Richard Steigemeier. The contract management meeting discussed the outline for the draft Project Management Plan which Union is now preparing, scheduled to be finished by December 1. The meeting also covered coordination of communications between the Project and the Corporation and Union's first monthly status report. Corporation staff members Steven Zukor and Andy Lawrence also visited the Parachute Creek site to review ongoing work and the plans for preparation of the Environmental Monitoring Plan.

At the Brea meeting, the participants discussed retort operations since February 1985, when the Corporation effectively stopped monitoring the Project since work at the site had stopped. Union has concluded that the shaft cooler design is based on a and on a number of factors which depend on Since this the shaft cooler would not work. Union went ahead with a vertical screw development, which they call the Pitt fix, named after a consultant on the effort. The vertical screw fix resulted Union has now turned to another device, called the Cobb fix, Mr. Axelrod stated that the Cobb fix (Mr. Groelinger left the meeting.) Mr. Axelrod noted that Mr. Axelrod stated that Union is preparing to test and is moving ahead very nicely on that effort. The Union team working on the development of the fluidized-bed combustor has talked to different vendors and has had consultations with the The team is in Europe right now talking to Union expects to make a decision on the combustor during the first week in December. Mr. Axelrod reported that the most favored vendors at present are

At Parachute Creek, Mr. Zukor and Mr. Lawrence found Mr. Axelrod reported that Mr. Zukor walked through all the areas which will be affected by the changes resulting from incorporation of the fluidized-bed combustor, and went through the mine and looked at some development work Union is doing there. Mr. Axelrod noted that Union has made substantial improvements in Mr. Zukor also examined the rock pump, which was disassembled, and he and Mr. Lawrence observed the shale pile being moved to its final location. Mr. Lawrence spent a great deal of time talking about the preparation of the Environmental Monitoring Plan. Mr. Axelrod noted that the visit ended with an invitation from Union to any of the Directors who want to see the rock pump disassembled. The rock pump will be down for a couple of months. Mr. Reichl asked Mr. Axelrod's opinion of the Cobb Mr. Axelrod replied that he thought the Cobb (Mr. Keegan and Mr. von Turk left the meeting.)

Continuation of Tar Sands Discussion

Mr. Bayrer reported that the Sunnyside and PR Spring Projects remain under consideration under the Tar Sands Solicitation. Both projects meet all minimum requirements. If the Board finds them qualified, the solicitation calls for a ranking procedure. The Board could choose to negotiate with the highest ranked project, could choose not to rank the projects or could choose to negotiate with both projects. Mr. Bayrer referred the Board to the staff's ranking under Tab 10 of their agenda books, "Tar Sands Solicitation Ranking of Qualified Projects." He reviewed the ranking criteria and noted that both projects have significant weaknesses. He said that both projects were virtually equal on programmatic grounds and stated that the staff recommends that the Board not rank one project above the other. (Mr. Groelinger re-joined the meeting.) He recommended the Board give the projects 60 days to complete their equity subscription.

Mr. Reichl noted that both projects involve solvent extraction systems, and asked if there were a great deal of technical difference between them. Mr. Axelrod replied that Sunnyside uses the Dravo process, which is an automated batch process rather than a continuous operation that has been used commercially, but not on tar sands. Mr. Axelrod noted that the PR Spring Project has proposed to use the Solv-Ex process, which has not been demonstrated on a commercial scale. Sunnyside proposes to use the ART process, a commercialized process, for upgrading; PR Spring has proposed to use the Aurabon process, which has not been used commercially to date.

Mr. Bayrer reported that PR Spring is located on an Indian reservation, but the lease is from the federal government and the title should be clear. He thought there would be no problems with the Sunnyside Project's title. Mr. Schroeder noted that both projects were ranked low in terms of their management. Mr. Bayrer said that the low management rankings stemmed from the fact that neither project had completed its equity subscription.

Mr. Rawicz stated that it would be premature for the Board was not ready to vote on either project, as the staff needed more time to assess possible conflicts of interest. Mr. Rawicz said the Board could provide guidance and direction to the projects. There was a Sense of the Board that the Board would take the staff's recommendations concerning ranking and evaluation of Tar Sands projects under advisement and the Board urged the Sunnyside and PR Spring Projects to complete their equity subscription.

The meeting was adjourned at 4:50 p.m.

Secretary

United States
Synthetic Fuels Corporation

January 2, 1986

MEMORANDUM FOR MR. NOBLE

FROM: Len Rawicz

SUBJECT: Business Plan Report

Public Law 99-190, Section ___(e), Department of Interior and Related Agencies Appropriations Act, 1986, Title II-Related Agencies under the head "Department of Treasury, Energy Security Reserve (Including Rescission)" provides that --

> the Corporation by September 15, 1986, shall transmit to the Committee on Energy and Natural Resources of the Senate and the Committee on Banking, Housing and Urban Affairs of the House of Representatives a report (1) containing a review of its Phase I Business Plan dated February 19, 1985 and (2) fulfilling the requirements of section 126(b)(3) of the Energy Security Act (42 U.S.C. 8722(C)(3))

However, the Conference Report (H. Rept. 99-450) accompanying H.J. Res. 465 which was enacted as Pub. L. 99-190 in referring to this report states that "8. a final report is due Congress within 60 days." This language differs from Conference Report (H. Rept. 99-443) accompanying H.J. Res. 465 when this Resolution was defeated by the House on December 16, 1985, three days before P.L. 99-1190 was enacted, which states that "8. a final report is due Congress by September 15, 1986." In addition, a companion and almost duplicate provision abolishing the Corporation was contained in H.R. 3128 which passed the House on December 19, 1985. The Conference Report (H. Rept. 453) on H.R. 3128 the Consolidated Omnibus Reconciliation Act of 1985 calls for the same reporting requirement by the Corporation but requires that this report be filed "within 60 days of the date of enactment of this Act." H.R. 3128 has not yet been passed by the Senate.

Since the Corporation is to be terminated within 120 days of enactment of Pub. L. 99-190 and the Board is to be disestablished within 60 days of enactment of this law, the request for the Corporation to file a report by September 15, 1986 is seemingly inconsistent. This matter was pointed out by the Corporation to the Senate staff during debate on the termination of the Corporation and evidently was corrected in the Omnibus Reconciliation Bill and in the Conference Report on Pub. L. 99-190 but not in the actual language that was enacted.

In this situation the Board has a choice of completing and filing the required report by February 16, 1986 or leaving this report as an item to be considered by the Secretary of Treasury. In making its decision the Board may desire to take into account the fact that the expertise presently exists within the Corporation to meet this reporting requirement but may not be readily available to the Secretary of Treasury in the future.

DEPARTMENT OF THE TREASURY

ENERGY SECURITY RESERVE

(INCLUDING RESCISSION)

Of the funds appropriated to the Energy Security Reserve by the Department of the Interior and Related Agencies Appropriations Act, 1980, (Public Law 96-126) and subsequently made available to carry out Part B of title I of the Energy Security Act (Public Law 96-294) by Public Laws 96-304, 96-514, and 98-473, the amounts available to the Board of Directors of the United States Synthetic Fuels Corporation and not obligated as of the date of enactment of this Act are rescinded, except that this rescission shall not apply to (1) funds made available for Clean Coal Technology by this Act; (2) such amounts as may be necessary to make payments for synthetic fuels projects or modules for which legally binding awards or commitments for financial assistance were entered into under title I of the Energy Security Act before the date of enactment of this Act; and (3) $10,000,000 to be used to terminate the Corporation in accordance with subtitle J of the Energy Security Act: Provided, That to the extent that the Secretary of the Treasury may be required to take an action under section 131(q) of the Energy Security Act in connection with such awards or commitments, the Secretary shall complete such action within 30 days of enactment of this Act: Provided further, That the limitation in Public Law 98-473 on the initial use of $5,700,000,000 of such funds only for obligation to synthetic fuel projects with Letters of Intent authorized by the Board of Directors of the United States Synthetic Fuels Corporation on or before June 1, 1984, is hereby repealed: Provided further, That of the funds in the Energy Security Reserve prior to the date of enactment of this Act $400,000,000 shall be available for the Clean Coal Technology Program in the Department of Energy authorized under the Clean Coal Technology Reserve proviso of Public Law 98-473 for the purpose of conducting cost-shared Clean Coal Technology projects for the construction and operation of facilities to demonstrate the feasibility for future commercial applications of such technology, to remain available until expended, of which $100,000,000 shall be immediately available; (2) an additional $150,000,000 shall be available beginning October 1, 1986; and (3) an additional $150,000,000 shall be available beginning october 1, 1987: Provided further, That the proviso in Public Law 98-473 depositing and retaining in the Clean Coal Technology Reserve $750,000,000 of funds in the Energy Security Reserve rescinded by said Act is amended so as to reduce the current amount of such deposited and retained funds to $350,000,000: Provided further, That notwithstanding section 191 of the Energy Security Act (Public Law 96-

294), effective the date of enactment of this Act, the Board may not make any legally binding awards or commitments for financial assistance (including any changes in an existing award or commitment) pursuant to the Energy Security Act for synthetic fuel project proposals, except that nothing in this Act shall impair or alter the powers, duties, rights, obligations, privileges, or liabilities of the Corporation, its Board or Chairman, or project sponsors in the performance and completion of the terms and undertakings of a legally binding award or commitment entered into prior to the date of enactment of the Act: Provided further, That (1) within 60 days of enactment of this Act, the Directors of the Synthetic Fuels Corporation shall terminate their duties under the Energy Security Act and be discharged; and (2) within 120 days of enactment of this Act, the Corporation shall terminate in accordance with Subtitle J of said Act: Provided further, That within 60 days of enactment of this Act (or earlier, in the event of absence of a Chairman of the Synthetic Fuels Corporation) the Secretary of the Treasury shall assume the duties of the Chairman: Provided further, That, notwithstanding any other provisions of law, the duties and responsibilities of the Secretary of the Treasury under Subtitle J of said Act or this Act may not be transferred to any other Federal department or agency: Provided further, That notwithstanding such termination, the Advisory Committee established under section 123 of the Energy Security Act (42 U.S.C. 8719) shall remain in effect to advise the Secretary of the Treasury regarding the administration of any contract or obligation of the Corporation pursuant to subtitle D of said Act: Provided further, That the Director of the Office of Personnel Management shall, before February 1, 1986, determine the amount of compensation rights which each Director, officer, or employee shall be legally entitled to under any contract in effect on the date of enactment of this Act: Provided further, That effective on the date of enactment of this Act, no change in any compensation or benefit in effect on the date of enactment of this Act shall be allowed or permitted, unless the Director of the Office of Personnel Management agrees that such change is reasonable: Provided further, That effective on the date of enactment of this Act, (1) no officer or employee of the Corporation shall receive a salary in excess of the rate of basic pay payable for level IV of the Executive Schedule under title 5 of the United States Code; and (2) the Corporation shall not waive any requirements in its By-Laws which are necessary for a Director, officer, or employee to qualify for pension or termination benefits under the By-Laws and written personnel policies and procedures in effect on the date of enactment of this Act: Provided further, That the Corporation, by September 15, 1986, shall transmit to the Committee on Energy and Natural Resources of the Senate and to the Committee on Energy and Commerce and Committee on Banking, Housing and Urban Affairs of the House of Representatives a report (1) containing a review of implementation of its Phase I Business Plan dated February 19, 1985 and (2) fulfilling the requirements of section 126(b)(3) of the Energy Security Act (42 U.S.C. 8722(c)(3)).

United States
Synthetic Fuels Corporation

January 14, 1986

MEMORANDUM FOR THE BOARD OF DIRECTORS

FROM: Legal Services Group

SUBJECT: December, 1985 SFC Termination Legislation (Pub. L. 99-190)

The purpose of this memorandum is to summarize the provisions of legislation, enacted on December 19, 1985, which provide for the termination of the Corporation and to analyze briefly the Board of Directors' duties under the legislation.

The Legislation

Public Law 99-190, Section __(e), Department of Interior and Related Agencies Appropriations Act, 1986, Title II-Related Agencies, under the head "Department of Treasury, Energy Security Reserve (Including Rescission), included provisions providing for the termination of the Corporation and imposing limits on Corporation activities pending such termination. The text of the applicable provisions of this Act is attached as Annex A. Certain of these provisions (e.g., rescission of funds and transfer of reserved funds to the clean coal technology program) are ancillary to the concerns of this memorandum, and, therefore, will not be discussed here.

The Appropriations Act contains SFC termination provisions to the following effect:

1. Effective December 19, 1985, the Board cannot make "any legally binding awards or commitments for financial assistance (including any changes in an existing award or commitment)..., except that nothing in this Act shall impair or alter the powers, duties, rights, obligations, privileges or liabilities of the Corporation, its Board or Chairman or project sponsors in the performance and completion of the terms and undertakings of a legally binding award or commitment entered into prior to" December 19, 1985.

2. Not later than February 17, 1986 the Directors shall terminate their duties and be discharged, and by April 18, 1986 the Corporation shall terminate in accordance with Subtitle J of the Energy Security Act (the "ESA").

3. Not later than February 17, 1986 the Secretary of the Treasury shall assume the duties of Chairman, and such duties may not be transferred by him to another federal agency.

4. To the extent the Secretary of the Treasury is required to consult with the Corporation in connection with an award or commitment under the ESA, such consultation is required by January 18, 1986.

5. The Director of the Office of Personnel Management ("OPM") is required to determine by February 1, 1986 the compensation rights to which the Corporation's Directors, officers and employees are entitled under any contract in effect on December 19, 1985.

6. No change in compensation or benefits in effect on December 19, 1985 is permitted unless the Director of OPM agrees the change is reasonable.

7. After December 19, 1985, no officer or employee may receive a salary in excess of Level IV of the Executive Schedule, and the Corporation may not waive any requirements in its By-laws which are necessary to qualify for pension or termination benefits under the By-laws and written personnel policies and procedures.

8. By September 15, 1986, the Corporation is required to transmit to Congress a report reviewing the implementation of the Phase I Business Plan and fulfilling the requirements of Section 126(b)(3) of the ESA.

Impact on Director Duties

For the most part, the termination provisions of the Appropriations Act prohibit the directors of the Corporation from exercising powers granted them under the ESA. The most obvious such prohibition is that against making any further awards of financial assistance or changing any existing award after December 19, 1985, although it excepts Board action in the performance and completion of the terms and undertakings of legally binding awards and commitments entered into prior to December 19, 1985. One question raised by this prohibition and exception is its effect on the proposed Loan Guarantee Agreement and collateral documents for Union Oil Company's Parachute Creek Project, a matter which will be discussed in a separate memorandum to the Board. However, the prohibition also raises questions concerning the Board's ability to amend existing contracts. The language of the termination provisions forbids making "any changes in an existing award or commitment." However, Senator McClure stated in the Congressional Record that this provision was not intended by the Conference Committee to "restrict changes which may be necessary as part of normal contract monitoring or administration," 131 Cong. Rec. 18,145 (daily ed. Dec. 19, 1985). It would, however, prevent the Board from making changes "which would increase the maximum obligational authority" for previously awarded projects. There is no similar commentary on this provision by any House member. Should the Board wish to amend any existing agreement, it would be necessary to further consider the meaning of the statutory language and its legislative history in the context of a specific amendment.

The termination provisions further prohibit the Corporation from changing any compensation or benefits in effect on December 19, 1985 unless the Director of OPM agrees that such change is reasonable, and also prohibit the Corporation from waiving any requirements in the By-laws which are necessary to qualify for pension or termination benefits. These two provisions have the effect of preventing the Board from changing the Corporation's compensation or benefit packages after December 19, 1985 without OPM consent and entirely bar the Corporation from waiving existing prerequisites to pension and termination benefits. The other provisions respecting compensation, the Director of OPM's determination as to contractual compensation entitlement and the Level IV Executive Schedule pay ceiling require no action by the Board.

The termination provisions impose one affirmative obligation on the Board. It must approve a report for submission to specified congressional committees by September 15, 1986 which reviews the implementation of the Phase I Business Plan and which fulfills the requirments of Section 126(b)(3) of the ESA. The requirement for a report concerning the implementation of the Phase I Business Plan is self-explanatory, but the requirement for a report fulfilling Section 126(b)(3) is confusing. Section 126(b)(3) specifies the contents of the Comprehensive Strategy. The Corporation provided a report on the Strategy to the Congress on June 28, 1985. The Board could simply note in its implementation report that a report on the Comprehensive Strategy has already been delivered, or the Board could revise and update its Report on the Comprehensive Strategy in view of the Corporation's activities since June 1985 and the recent Congressional actions. With respect to the inconsistent due date for this Report, the General Counsel has provided a memorandum to the Chairman, which is attached.

Finally, the termination provisions provide that by April 18, 1986 the Corporation shall terminate in accordance with Subtitle J of the ESA. Subtitle J of the ESA envisioned an end date for financial assistance awards on September 30, 1992 and a termination of the Corporation on September 30, 1997. After the former date, the Board was required to "diligently commence all practicable and reasonable steps to achieve an orderly termination of the Corporation's affairs" on or prior to the latter date, ESA §192(a). If the Board had not completed termination by September 30, 1997, the duty to do so was transferred to the Secretary of the Treasury, ESA §193(a). The incorporation by reference of all of Subtitle J of the ESA into the termination provisions is somewhat confusing. Since Congress did not explicitly change the dates in Subtitle J, a highly literal reading of the law would be that the obligation of the directors to commence the termination of the Corporation in 1992 was unaffected by the termination provisions. However, a reading more consonant with the intent of the termination language would be that the Board must now commence with the orderly termination of the Corporation in 120 days. As noted above, the Secretary of the Treasury is required to complete the termination tasks commenced by the Board.

Attachments

Mr. Tashman. With regard to the rescission legislation.

Mr. Yates. Yes.

Mr. Tashman. My guess is no, but we can check.

Mr. Yates. If there were, furnish them for the record. What responsibilities remain with regard to the active projects?

Mr. Bayrer. The responsibilities that remain are with regard to enforcing the provisions of the four contracts on the projects that are in the testimony. Some of those provisions go to the price guarantee payments on projects. Others with regard to disbursement of loan guarantee funds, a series of requirements for monitoring due diligence on the part of the sponsors, considerable responsibility with regard to environmental reports. That is a Treasury responsibility.

Mr. Sethness. My job is to pull together the right group of people to do that, sir.

Mr. Yates. Do you have to organize a group in Treasury to handle these contracts now?

Mr. Sethness. Yes, sir.

Mr. Yates. That will come before Mr. Roybal's subcommittee. Is there a special environmental monitoring plan?

Mr. Bayrer. Yes, sir, that will be in the group. As just mentioned, the Energy Security Act requires there be environmental monitoring plans. Those plans govern monitoring regulated as well as unregulated substances.

Mr. Yates. The funding for Mr. Sethness' group in preparation will be a part of the Treasury budget; is that correct?

Mr. Sethness. We have a dual answer to that. We are hoping that some of that $10 million will not, in fact, be required to settle out the pure terminations costs by April 18, and that the continuing—that we can use whatever is left of that money for the continual operations of the group.

Mr. Yates. You have a lot of important responsibilities in oversight, do you not?

Mr. Sethness. We have a considerable requirement to monitor effectively. I don't think we are going to require large numbers of people to actually do the monitoring ourselves. We are coordinating the efforts of the project sponsors along the way, contractors to help us work out those monitoring responsibilities.

Mr. Yates. Does the Department of Energy perform anything further on this, or is it all Treasury?

Mr. Bayrer. Under the Continuing Resolution, the responsibility is Treasury. However, the Department of Energy is a participant, along with the EPA, along with the committees that oversee the monitoring plans.

Mr. Yates. Are you going to need money in your budget?

Mr. Bayrer. Yes, sir.

Mr. Yates. Are you going to ask in the Treasury budget for the group you are putting together?

Mr. Sethness. Yes, sir.

Mr. Yates. We will ask Energy when they come in, and I assume EPA Committee will do the same. Would you place in the record, please, the kind of residual organization and level and type of personnel that you envision? Prepare a document and put it in the record what Treasury, Energy and EPA will do in oversight, and in continuing regulations, if any exist, and just making sure that the Federal Government's rights are protected in this ongoing activity.

[The information follows:]

0340m

APPROACH FOR TREASURY TO ASSUME

MONITORING OF SYNTHETIC FUELS PROJECTS

REMAINING MISSION

With the termination of the Corporation, the Government's ongoing responsibilities for the four assisted projects include:

1. Ensuring sponsor adherence to contract terms,
2. Carrying out fiduciary responsibilities,
3. Anticipating problems that could trigger contract provisions, and
4. Supporting administrative functions (testimony, budget).

Because the overall mission has been curtailed, programmatic responsibilities diminish regarding:

1. Efforts overcoming project difficulties that threaten technology availability -- particularly those requiring additional authority.
2. Maintaining expertise regarding synthetic fuels technical feasibility and economic viability.

The ongoing monitoring responsibilities for the assisted projects were assigned to the Department of the Treasury by Public Law 99-190. In addition, the Act provided for the continuation of the Advisory Committee (consisting of the Secretaries of Treasury, Defense, Interior and Energy and the Administrator of the Environmental Protection Agency) to advise the Department of Treasury with regard to the four synthetic fuels projects.

KEY RESPONSIBILITIES

A. Adhering to Contract Terms

   1. Approve modifications to project definition.
   2. Review required reports (e.g., approximately 46 per year for Dow).
   3. Check continuing best efforts by sponsors.
   4. Evaluate accomplishment of required milestones.
   5. Monitor ongoing requirements.

      a. Davis-Bacon,
      b. Small and disadvantaged business,
      c. Maintenance of permits and environmental reporting.

B. Fiduciary Responsibilities

   1. Loan disbursements and drawdown requests.

    a. Cost eligibility.
    b. Conformance with agreement.
    c. Equity contributions.

2. Price guarantee payments.

    a. Eligibility of product.
    b. Accuracy of payment request.
    c. Adequacy of invoice.

C. Anticipating Problems (i.e., Events Leading to Termination)

1. Evidence of failure of essential technologies.
2. Cost overruns.
3. External events (chiefly energy price declines and regulatory actions.
4. Fulfilling administrative requirements.

    a. Testimony to oversight committees.
    b. Annual budgets.
    c. Reports to Congress.
    d. Freedom of information requests.

SPECIFIC FUNCTIONS

A. Contract Manager

1. Oversight over all contract requirements to ensure satisfactory implementation.
2. Integration of functional inputs (e.g., cost, finance and legal).

B. Cost Analysis

1. Establish cost and schedule baselines.
2. Identify deviations from baselines and determine significance for project success.
3. Determine consistency between project progress and loan disbursement request.
4. Oversee Davis-Bacon requirements.

C. Environmental Monitor

1. Review permit status.
2. Evaluate environmental reports and data.
3. Chair Environmental Monitoring Plan Committees.
4. Check compliance with small and disadvantaged business requirements.
5. Investigate ad hoc events (particularly environmental accidents).

D. Legal Support

1. Review of disbursement requests.
2. Evaluate all potential defaults and identify remedies.
3. Freedom of information requests.

E. Financial Analysis

1. Ensure adequacy of disbursement requests.
2. Evaluate prospects for project viability.
3. Review sponsor quarterly and annual reports.
4. Support sponsor to ensure compliance with contract reporting requirements.

F. Technical Review

1. Track engineering and start-up to identify potential deviations from contract design assumptions.
2. Evaluate technical problems to determine impact on eventual project success.

G. Claim Processing

1. Invoice checklist.
2. Notification of Treasury.

H. Audit

1. Check validity of sponsor claims, costs, etc.

BASIS FOR ESTABLISHING STAFFING REQUIREMENTS

Principles employed in estimating staffing requirements.

1. Sufficient manpower equivalent to handle estimated workload.
2. Experienced managers on projects.
3. Coverage of each key function.
4. Double assignments for individuals where workload permits.
5. Provide limited backup to minimize essentiality of any one individual.
6. Employ existing Department of Treasury capabilities where practicable.

POTENTIAL COVERAGE OF FUNCTIONS

	UNION	COOL WATER	DOW	FOREST HILL	ENVIRONMENT	COST	FINANCE	TECHNOLOGY	OTHER
Group Leader									x
Contract Manager	x	x							
Contract Manager				x					
Contract Manager			x					x	
Environmental Analysis	x	x	x	x	x				
Cost Analysis	x	x		x		x			
Financial Analysis and Claim Processing							x		

Department of Treasury:

- Auditing
- Financial Systems Support
- Legal Support, including short-term hire from the Corporation.

Mr. Yates. Is it necessary to follow the technical status of these projects?

Mr. Bayrer. Following the technical status insofar as it is necessary for us to determine proper due diligence on the part of the project sponsors and to anticipate any problems that are likely to result in defaults on the project. However, it would not be necessary, for example, to collect substantial amounts of information on the technical front or be responsible for any dissemination.

Mr. Yates. Why would that not be true?

Mr. Bayrer. As the Corporation determined much of the data on the technical side is proprietary. In addition, it was our view, substantiated by a number of studies done for us by the Rand Corporation, ultimately the availability of the technology to the nation as a whole would be through the licensing of the technology holders. The real expertise in terms of designing additional plants and the like would be in the ongoing plant operations and in associated engineering firms.

That would not be the information disseminated by the government.

Mr. Yates. No information coming out of the operation of these plants that is considered to be made available, or expected to be made available for public consumption?

Mr. Bayrer. Most of the information for the public would be on the environmental front.

Information that the technologies are working well or not working well would be available; but detailed technology information would not be publicly available.

Mr. Yates. Where are you going to get the necessary personnel for your organization?

Mr. Sethness. My current plan, already, in discussion with a number of people, in keeping with goals of making it as effective and inexpensive as possible, people from the Synfuels that already know the projects and procedures.

Mr. Yates. Do you know what your costs are likely to be for fiscal year 1987?

Mr. Sethness. We have not developed an estimate for that yet.

Mr. Yates. What is the status——

Mr. Sethness. Probably a group no larger than 10 people in total.

Mr. Yates. Is that enough to monitor these contracts?

Mr. Sethness. Yes.

Mr. Yates. When will the final report on Corporation activities be submitted?

Mr. Sethness. The legislation requires it to be done by September 30.

Mr. Yates. You are going to prepare that?

Mr. Sethness. We will figure out how to get that done.

Mr. Yates. What is the status of shutting down the Corporation? April 15?

Mr. Miller. We are now day 59, and we are planning toward April 15. April 18 is the final date under the law.

Mr. Yates. We have some questions for the record, and we ask you to reply to those.

Mr. Regula, if there are no further questions, we hold the meeting open for further word.

[Questions and answers for the record follow:]

COOL WATER

Q.1 What are the financial terms of your agreement?

A.1 Financial assistance to the project is limited to a maximum of $120 million in price guarantees for the medium-Btu syngas produced when the gas has been converted to electric power, sold to and distributed through the Southern California Edison system. Corporation assistance ends when either 20 trillion Btu's of syngas have been produced or when $120 million in price guarantee payments have been made, whichever occurs first.

Price guarantee payments are based upon the difference between the market price and the contract guaranteed price for the syngas. The guaranteed price is $12.50 per million Btu for the first 9 trillion Btu's, and $9.75 per million Btu for the next 11 trillion Btu's, escalated for inflation. Market price of the syngas is essentially related to the value of the electric power produced from the syngas, wherein power values are established through the California Public Utilities Commission procedures. Through December 31, 1985 the Cool Water project produced 5 trillion Btu's of syngas for which it received price differential payments of approximately $40 million. Corporation profit-sharing provisions are included for the first 20 years of the project's life.

Q.2 How long does it get Government support?

A.2 Government support ceases upon payment of $120 million in price guarantees, the end of Stage 1 operations of the plant (June, 1989) or the production of 20 trillion Btu's of eligible product, whichever occurs first.

Q.3 How long has this facility been operating?

A.3 Operation of the coal gasifier began on May 7, 1984 and initial production of electricity occurred about two weeks later on May 20. Commercial operations began on June 24, 1984 upon completion of a 10-day acceptance test run required by the Corporation.

Q.4 What is your assessment of its operating performance?

A.4 The Cool Water plant has exceeded its projected production goals, despite encountering various difficulties typically associated with the start-up of a first-of-a-kind facility. The plant has operated at full design production capacity in terms of coal throughput, syngas generation and electric power output and its pollutant emissions are well below strict State of California permit standards. Goals set for "ramping up" production during the first few years of operation have been met or exceeded. From initial start-up on June, 1984 through the end of 1985, the plant has demonstrated an on-stream factor in excess of 55 percent. During 1985, on-stream time exceeded 60 percent.

Q.5 Is there any indication that industry will use this technology commercially in the future?

A.5 The project demonstrates that a high pressure gasifier and a combined-cycle power generating unit can be integrated efficiently and that power can be dispatched reliably. The proven performance of a high temperature heat recovery system integrated with the gasifier and power generation unit should open the substantial utility market to fuel gas from coal. Currently, the Utility Coal Gasification Association, a group comprised of over 30 utility companies, is following developments at Cool Water closely. Within this Association a smaller group of perhaps five to ten utilities appears to have already initiated serious studies aimed at installation of IGCC plants in the early 1990's.

DOW SYNGAS PROJECT

Q.1 What are the financial terms of your agreement?

A.1 The assistance is in the form of price guarantees not to exceed $620 million.

The guarantee price will be initially $12.50 per million Btu of eligible product (medium Btu gas) for the first 10,950 billion Btu's and $11.00 per million Btu thereafter as adjusted quarterly for inflation after June, 1983 based on a predetermined formula.

The duration of the price guarantee is to be the earlier of 10 years from initial production or the maximum aggregate payment of price guarantee funds, as follows:

1. Primary price guarantee payments not to exceed in the aggregate $490 million.

2. Secondary price guarantee payments not to exceed in the aggregate $130 million, to become available the month following the exhaustion of the primary price guarantee payments. Secondary price guarantee payments not to exceed $40 million, $35 million, $30 million and $25 million in the four succeeding 12 month periods.

There is a formula for revenue sharing which is applicable over a period of sixteen years from initial production.

Q.2 When will this facility be operational?

A.2 Initial operation of the facility is projected to begin in the late spring of 1987. The project is currently on schedule to meet this date. Continuous reliable operation should be achievable in about one year after first production.

Q.3 How does this technology differ from the Cool Water gasification technology?

A.3 The Dow coal gasification technology is an entrained-flow gasifier as is the Cool Water technology. However, the Dow gasifier was designed for processing low rank coals (i.e., subbituminous and lignite) reliably and efficiently. Therefore, it is projected to be the more economic technology selection for processing low rank coals.

FOREST HILL

Q.1. What are the financial terms of your agreement?

A.1. The Commitment to Guarantee obligates the Corporation to guarantee loans by Morgan Guaranty Trust Company of New York in a principal amount not to exceed $22,400,000. In addition, a $2,000,000 allowance for accrued interest brings the Corporation's maximum exposure with respect to loans to $24,400,000.

The Corporation's initial price guarantee obligation is $35,600,000. This increases to a maximum obligation under the Commitment of $60,000,000 to the extent Forest Hill borrows less than $22,400,000 and on a dollar for dollar basis as the guaranteed debt is repaid and the Corporation's contingent liability for accrued interest decreases.

The guarantee price is $40 per barrel for the first 500,000 barrels of eligible product sold and $37.50 per barrel for subsequent production sold. In each case, the guaranteed price is multiplied by a factor equal to the Producer Price Index for the month prior to the month for which the determination divided by the Producer Price Index for March, 1985 less four percent per year.

The Commitment to Guarantee also provides for a 16 year profit sharing period during which Forest Hill is obligated to make payments either as a pro rata mandatory prepayment of guaranteed debt or as profit sharing payments to the Government.

Q.2. When will the project be operational?

A.2. The first phase of the project involving modification of existing wells and the addition of liquid oxygen and nitrogen facilities is currently operating. Completion of construction of the second phase is scheduled for fourth quarter 1987 with full production set for 1989.

Q.3. How much oil is expected to be produced on a daily basis?

A.3. At full production in 1989, the nominal production rate is projected to be 1,750 barrels per day.

UNION OIL

It is the understanding of the Corporation that the Secretary of Treasury, since becoming Chairman of the Synthetic Fuels Corporation on February 18, 1986, has instructed his General Counsel, in coordination with other legal offices, to undertake his own review of the actions of the Corporation's Board of Directors as they relate to the Amendment Agreement signed by the Union Oil Company and the Synthetic Fuels Corporation on October 16, 1985 and the loan guarantee agreement executed January 21, 1986. The Congress will be informed as to the results of this review.

The responses to questions 1 through 3 represent the position taken by the Corporation prior to its resignation on February 17, 1986.

Q.1 Please describe the overall agreement now in place on the Union project.

A.1 The overall agreement now in place on the Union project incorporates the following major provisions:

o Union will continue its efforts to achieve the start-up and operation of the existing facilities at Parachute Creek, through the implementation of certain modifications to the spent shale cooling systems.

o At the same time, Union will pursue the development, design, engineering and cost estimating for the addition of a fluidized-bed combustor and certain related facilities (the Augmentation Program) to the existing plant. Further, and subject to certain financial parameters relating to economic reasonableness, Union will pursue, in a reasonably diligent and prudent business manner, the construction, start-up and operation of the Augmentation Program so as to achieve commercial production from the facilities by June 30, 1990. Union estimates that the cost of the Augmentation Program will be on the order of $550 million.

- The Corporation commits to guarantee a loan in a principal amount of up to $300 million, to fund the Augmentation Program in part.

- In addition to the $400 million originally committed under the Union/DOE contract, the Corporation will provide price support assistance for the Augmentation Program consisting initially of $173 million, to be increased dollar for dollar to the extent guaranteed debt is repaid and the interest allowance with respect thereto is reduced, but in no event is the amount of additional price support assistance payment to exceed $500 million.

- The agreement now in place provides for profit-sharing payments for a period of 16 years after the date of initial production, to be applied, first to the prepayment of the principal of the guaranteed debt and, thereafter, directly to the Corporation.

Q.2 How does this agreement differ from the original DOE agreement?

A.2 As noted above, the present agreement calls for Union to make an investment of about $550 million to augment the existing facility with more efficient fluidized-bed technology. The fluidized-bed technology and the costs thereof, were not contemplated in the original DOE agreement.

The present agreement also calls for the Corporation to provide for additional assistance up to a maximum of $500 million in the form of loan guarantees and price guarantees. However, no portion of the $500 million Corporation assistance may be used for price support payments until the fluidized-bed technology is commercially operational. The DOE agreement provided $400 million in price guarantees, only.

The present agreement extends, for a period of 10 years from initial production the period during which Union may receive price guarantee assistance for the syncrude produced under the original DOE contract. Under the DOE contract, price guarantee assistance ceased in June, 1990. The present agreement also extends the time period during which DOD may purchase certain syncrude and refined products from Union.

The present agreement provides for Union to make profit-sharing payments under certain conditions for a period of 16 years after the first sale of eligible product. The original DOE agreement also provided for profit sharing, but payments were envisioned for a shorter time period and, based upon product price level, rather than project cash flow, as in the present agreement.

Q.3 What was the essence of the agreement approved by the Corporation's Board on October 16, 1985 and how does that differ from the final agreement approved by the Board on January 21, 1986?

A.3 The Amendment Agreement, approved in its final form by the Board on October 16, 1985 and executed by the Corporation on the same date, provided for the commitment of the Corporation to make price guarantee payments and to guarantee loans. The Amendment Agreement set forth the terms of the price guarantee and the form of the Corporation's guarantee with respect to the guaranteed debt. The Amendment Agreement also contained the major terms of the loan agreement under which the guaranteed debt was to be issued and provided that the loan agreement, in form and substance consistent with such terms, would be executed by the Corporation on a subsequent date, subject to the fulfillment of specified conditions to the reasonable satisfaction of the Corporation. The Amendment Agreement of October in itself constituted a final agreement, and the execution of the loan agreement and the fulfillment of the specified conditions in January were merely in implementation of the Amendment Agreement. The loan agreement, as executed, did not contain any changes from the terms set forth in the Amendment Agreement.

Q.4 When does Union plan to begin construction of facility modifications?

A.4 Final design and construction of the fluidized-bed combustor is scheduled to begin in late December, 1986.

Q.5 When will the plant be operational?

A.5 It is possible that the existing facilities may be placed into operation upon completion and testing of the modified spent shale mixing/cooling system which is now being installed. If this modification does not operate successfully, then construction of the fluidized-bed combustor will take about 2-1/2 years and start-up of the facility will begin in mid-1989. During the first year of operation, it is expected that production will be at a reduced rate, but will be ramped up to full capacity in 1990.

SFC SHUTDOWN COSTS

On December 13, 1985, the SFC Comptroller's office prepared an estimate of liquidation costs over the period of December 16, 1985 through May 5, 1986, and it seems to correspond to the budget presented today.

Q.1 Are there any changes in this termination budget relative to the rough estimate submitted in December?

A.1 There are some changes in the line items that make up the estimates. These changes represent refinements arising out of later and more certain knowledge of the issues involved. At the time the original estimate was developed, the Continuing Resolution was under consideration and was not yet law. For example, specific termination decisions had not yet been made by the Board of Directors, and specific contract close-out provisions had not been negotiated, billed and tabulated. The changes in the estimates are reflected in the analysis which is submitted for the record.

SFC TERMINATION BUDGET
COMPARISON OF ORIGINAL AND REVISED ESTIMATES

(Dollars in thousands)

	12/13 Est.	Revised Est.	Difference	Remarks
STAFF COSTS				
Salaries & Benefits	$2,403	$2,318	-$85	Original estimate based on a general formula. Revised estimate based on position by position application of plan approved by Board (1/21/86).
Accrued annual leave payable	500	493	-7	Original estimate based on formula, revised on accruals for approved plan, position by position.
Severance pay payable	1,500	1,050	-450	Original estimate based on formula, revised on accruals for approved plan, position by position.
Subtotal	4,403	3,861	-542	
OFFICE LEASE PAYABLE				
Rent to 4/18	1,279	1,098	-181	Revised estimate reflects adjustments for overcharges by lessor.
Telephone, utilities	127	127	-	
Lease penalty contingency	2,212	2,212	-	
Subtotal	3,617	3,436	-181	
CONTRACTUAL AGREEMENTS				
Contracts and consultants (incl. accts. payable)	1,573	1,399	-169	Original estimate assumed penalty payments that have not materialized.
Data processing	120	175	+50	Revised estimate reflects later termination of equipment leases, extension of time sharing costs.
Repair/maintenance	30	30	-	
Moving expenses	49	49	-	
Generic studies, spec. reviews	100	188	+88	Revised estimate reflects unanticipated billings.
Insurance & misc.	108	588	+480	Revised estimate includes unanticipated premium increases for liability insurance.
Subtotal	1,980	2,429	+449	
ALL OTHER	-	274	+274	
TOTAL	10,000	10,000	-	

February 18, 1986

Q.2 Of the $2,403,000 attributed to salaries and benefits, how much is for salaries and how much is for benefits? What benefits are included?

A.2) Of the $2,403 thousand originally estimated for salaries and benefits, $1,922 thousand was estimated for salaries on an assumed formula phase-down and $482 thousand was estimated for benefits. The benefits are estimated on the basis of a percentage of salaries -- in this case 25 percent. It should be noted here that OMB Circular A-76 (8/12/85) sets the Federal average for comparable benefits at 35.75 percent of salary. The Corporation's benefits include the following:

Medical and Dental Insurance
Life Insurance
Long-term Disability Insurance
Retirement/Savings Plans
Social Security
Workers' Compensation
Unemployment Compensation

Q.3 $2.2 million is budgeted for "lease penalty contingency." How will this be spent?

A.3 The office space lease originally negotiated for Corporate use ran until April 30, 1987, one year after the recently legislated termination of the Corporation. If the Corporation is unsuccessful in its current efforts to sublease the space to GSA or another firm, the award represents the next year's rent. If the negotiations are successful, the money will be held for use or determination of disposition by the Secretary of the Treasury.

Q.4 Does the Treasury Department plan to hire former Corporation employees? What will be the terms of this employment?

A.4 Treasury plans to hire a limited number, no more than ten, of Corporation employees familiar with the projects to continue the direction and monitoring of the projects. We believe that the specific personnel needs for these tasks will change considerably over the next few years as the projects progress into routine operating status. Accordingly, we anticipate utilizing temporary, limited term appointments to employ them.

Q.5 Why should the taxpayers pay $1.4 million for "contracts and consultants" during this period. Please provide specifics for the RECORD.

A.5 The Corporation maintains its accounts on a commercial accrual basis rather than on a federal obligation basis. Virtually all of the amounts estimated represent the close-out expenses of contractual obligations previously incurred by the Corporation, including accounts payable at December 19, 1985, payment of outstanding checks at that date and final billings anticipated. (Had these contracts been recorded as obligations this line item would have been near zero.) The only contracts awarded since the passage of P.L. 99-190 have been those directly necessary to the termination of the Corporation. A specific list of contracts is included in the report entitled "Status of Contracts and Consulting Agreements as of January 31, 1986" submitted elsewhere in this record.

Q.6 Regarding severance payments, how was the $1,500,000 cost figure calculated? How is severance pay determined for each employee?

A.6 The amount of $1,500 thousand originally estimated for severance pay (December 13, 1985) was based on a formula for average severance pay for the staff phase-down assumed at that time. The current estimate of $1,050 thousand was based upon the actual severance pay due each individual (under previous corporate policy) as they were scheduled to be discharged under the termination plan approved by the Board of Directors. The policy provides for payment based upon years of service with the Corporation as follows:

- a lump sum payment of four weeks salary for one year of service or less
- six weeks salary for two years or a fraction of service
- eight weeks salary for three years or a fraction of service
- ten weeks salary for four years or a fraction of service
- twelve weeks salary for five years or a fraction of service
- fourteen weeks salary for six years or a fraction of service

Q.7 Are any former Corporation employees receiving retirement benefits?

A.7 No one is receiving or has received any annuity payments. When vested employees leave the Corporation they receive a lump sum payment from the Plan Trustee of all amounts held in their name. They then have the individual option of either rolling over the amount into an IRA or paying income tax on the amount if they do not choose the roll-over.

Q.9 What is the basis for the $3,617,000 attributed to office lease payable? To the extent this number reflects future lease payments, could the Corporation mitigate its damages by subleasing its offices?

A.9 As discussed previously, the $3,617 thousand originally estimated has been refined in the current estimate to $3,436 thousand. That estimate includes several elements, as follows:

Rent payable through the period of occupancy (April 18, 1986)	$1,098 thousand
Telephone and utilities through the period of occupancy	$ 127 thousand
Lease penalty contingency (Covering remaining time of the lease)	$2,212 thousand

Again, the Corporation has been engaged in intensive negotiations to secure a new occupant for the space in order to alleviate these potential costs.

Q.10 What "contracts" are included in the "contracts, maintenance agreements and leases payable" category? For what other leases is the Corporation responsible in addition to its office lease?

A.10 The details of contracts awarded are shown in the report of "Status of Contracts and Consulting Agreements as of January 31, 1986" submitted elsewhere in this hearing for the record. The leases mentioned in the December 13, 1985 estimate are for equipment leases and include photocopy equipment, office equipment, and data processing equipment. The current estimates of the cost of liquidation of the leases phase-down and for these items follows:

Photocopy equipment	$ 49.5 thousand
ADP equipment	29.6 thousand
Office equipment	23.2 thousand

TUESDAY, MARCH 18, 1986.

ENERGY CONSERVATION

WITNESSES

DONNA R. FITZPATRICK, ASSISTANT SECRETARY FOR CONSERVATION AND RENEWABLE ENERGY

ALAN J. STREB, DEPUTY ASSISTANT SECRETARY FOR CONSERVATION

FRANK M. STEWART, DIRECTOR, OFFICE OF STATE AND LOCAL ASSISTANCE PROGRAMS

Mr. YATES. Mr. Reporter, show the hearing as coming to order. This is the hearing on the budget for fiscal year 1987 for the Department of Energy's Energy Conservation. Appearing in support of that budget is Miss Donna R. Fitzpatrick, Assistant Secretary for Conservation and Renewable Energy, and she is supported by Alan Streb, Deputy Assistant Secretary for Conservation; and Frank Stewart, Director of the Office of State and Local Assistance Programs.

Miss Fitzpatrick's biography may go into the record at this point, and her statement may follow the biography.

[The biography and statement of Donna R. Fitzpatrick follow:]

U.S. Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202/252-5644

BIOGRAPHY

DONNA R. FITZPATRICK

Donna R. Fitzpatrick was nominated by President Reagan on July 31, 1985, and confirmed by the Senate on December 19, 1985. She was sworn in as Assistant Secretary for Conservation and Renewable Energy, U.S. Department of Energy (DOE) on December 20, 1985. She had served as Acting Assistant Secretary since March 11, 1985, and as the Principal Deputy Assistant Secretary since January 1984.

In this position her responsibilities include management of research and development programs in energy efficiency and alternative fuels for industry, buildings, and vehicles. The programs in renewable energy resources involve research in active and passive solar, photovoltaic, wind, ocean thermal, geothermal, and biomass technologies. In addition, she administers federal grant programs for low-income home weatherization and energy efficiency improvements in schools and hospitals, and coordinates management of three of the five federal power marketing administrations.

In 1983, Miss Fitzpatrick served on a consultant team for the Secretary of Energy to conduct a general review of the Department's conservation and renewable energy programs, focusing on policy, program goals and priorities, budget levels, and new initiatives. In 1980, she served the Office of the President-elect as a member of the Transition Team for the National Science Foundation, reviewing national policy in basic science research, project efficiency, funding, and proposed legislation.

In her law practice, first with the Washington, D.C., firm of O'Connor and Hannan and then as a sole practitioner, Miss Fitzpatrick worked extensively on real estate development, helping to coordinate public and private interests and activities where Federal and District of Columbia involvement was required. This included work with local utilities and engineering planners to determine the legal, economic, and technical feasibility of various energy options, such as solar, cogeneration, and an on-site power generation and district heating system for large scale, high density residential and commercial uses.

Miss Fitzpatrick is also experienced in civil litigation, including administrative law and contracting issues.

Miss Fitzpatrick received a Bachelor's degree in physics cum laude from the American University in 1972. After teaching high school chemistry and mathematics, she entered law school and graduated from the National Law Center of George Washington University in 1980.

January 1986

Statement of Donna R. Fitzpatrick
Assistant Secretary for Conservation and Renewable Energy
Department of Energy
Before the
Committee on Appropriations
Subcommittee on Interior and Related Agencies

Mr. Chairman and Members of the Subcommittee:
I appreciate the opportunity to appear before you today to discuss the FY 1987 budget request for the Conservation programs of the Department of Energy. The budget for these programs is consistent with the goals and objectives of national energy policy and is fully responsive to the Administration and Congressional goals of deficit reduction.

The Administration's overall energy goal is to foster an adequate supply of energy at reasonable cost. We can achieve that goal through the combination of energy stability, energy security, and energy strength. Energy stability has been achieved over the past five years. Our energy security is growing stronger day by day. Our objective for the immediate future is to build this Nation's energy strength, making full use of its vast natural resources and the daring and ingenuity of its citizens. Our approach includes supporting advances in energy conservation as well as possible energy supply sources of the future such as renewable energy.

Deficit reduction is perhaps the preeminent domestic economic imperative today and the Department fully recognizes that fact. For this reason, we are doing all we can to concentrate increasingly scarce resources on those programs and projects that directly fulfill a responsibility of the Federal government and truly require Federal assistance. If we are to achieve our overriding goal of deficit reduction we cannot afford to continue to allocate scarce Federal resources to activities where the rationale for continued Federal involvement is weak and where State and local organizations or private industry can and should take over responsibilities presently borne by the Federal government. Also, we cannot permit programs or projects to continue with Federal support unless they meet a high priority national need. We have no choice under the current and necessarily strict fiscal regimen but to concentrate scarce resources where they show promise of bringing the greatest benefits.

As we seek ways to gain the greatest benefit from our limited resources, we will investigate cooperative research and development ventures with private industry consortia. This approach to R&D funding has the potential to provide greater leverage of Federal funds and to assure that resources for applied R&D are focused on high priority areas where there is private commitment to follow through with promising technologies. It can also foster increased technology transfer by involving industry earlier in the R&D sequence. One of our early steps will be the publication of a general solicitation of industry interest in forming R&D ventures in the various conservation and renewable energy program areas.

In order to contribute to the achievement of our goals, the FY 1987 budget request for energy conservation and development (R&D) programs will continue to support development of a mix of technologies that can contribute to both energy supply and improved end-use efficiency. The FY 1987 budget request for Conservation programs under this subcommittee's jurisdiction totals $76.2 million. I would like now to discuss each of our major program areas in the Energy Conservation appropriation and its related FY 1987 funding request.

Buildings and Community Systems

The buildings sector accounts for approximately 36 percent of our total national energy consumption. In residential buildings, space heating, water heating, and refrigeration use the largest amounts of energy; in commercial buildings, space heating, lighting, and air conditioning use the largest amounts. Significant energy savings can be achieved by improving the efficiency of these and related building functions. Our Buildings and Community Systems program conducts research to advance the technologies that will make these savings possible and makes the results of that research available to the private sector. This program also implements building energy regulatory programs mandated by Congress.

We are requesting $14.1 million for Buildings and Community Systems research, technical transfer, and regulatory activities in FY 1987. This is $23.1 million less than the FY 1986 appropriation. Of the funds requested, $9.5 million are for research and development projects, $2.2 million are for Congressionally mandated regulatory programs, and $2.4 million are for program direction.

The research and development funds are for three subprograms: Building Systems, Technology and Consumer Products, and Analysis and Technology Transfer. We are requesting $3.5 million for the Building Systems subprogram to continue research in walls; roofs; and indoor air quality, infiltration, and ventilation. The wall research will include thermal testing of different types of walls, evaluation of wall thermal anomalies, evaluation of the influence of mass on energy use, and study of foundation designs and earth contact.

Our roof research focuses on improving the energy efficiency and durability of roofs. In FY 1987, research areas will include testing the thermal performance of high and low efficiency roofs under field conditions, developing diagnostic probes for quantitative measurements of moisture in roof systems, and developing a mathematical model to predict thermal performance of composite roofs.

In FY 1987, we will continue our investigations of ways to maintain acceptable air quality in energy efficient buildings. These efforts will include studies of radon entry and mitigation methods and of the generation and distribution of biological aerosols. We will also continue development and evaluation of infiltration, ventilation, and air leakage measurement systems.

We are requesting $5.0 million for the Technology and Consumer Products subprogram in FY 1987. The purpose of this research is to provide technologies needed to develop more efficient building energy conversion processes and equipment. The greatest promise for significant energy savings in building equipment is in the areas of thermally activated heat pumps and advanced lighting. Therefore, the requested funding is for continued research in those areas.

In thermally activated heat pumps, we will continue research to advance the technologies for engine-driven and absorption systems. In lighting equipment research, we will continue to investigate advanced light sources with emphasis on magnetically loaded lamps and electrodeless gigahertz lamp discharges. We will also continue to study the optimized integration of lighting system components into the total building.

The purposes of the Analysis and Technology Transfer subprogram are to provide the analytic tools and information needed for program planning and to ensure that research results and information on conservation in buildings are transferred to potential users. We are requesting $1.0 million for this subprogram. This funding will support centralized technology transfer activities, continued U.S. participation in International Energy Agency agreements, technology assessments, and policy and program analyses at reduced levels from FY 1986.

The Congressionally-mandated activities for which we are requesting funding are Appliance Standards and the Federal Energy Management Program. For Appliance Standards, we are requesting $1.2 million to support research and analysis on the impacts of appliance standards and a reevaluation of those standards previously issued. This reevaluation is required by a recent U. S. Court of Appeals decision as well as by the Energy Policy and Conservation Act.

The Federal Energy Management Program is a coordinated effort to reduce energy use by Federal agencies, conserve scarce fuels, and transfer utilization efficiency information among the agencies, state and local governments, and the private sector. We are requesting $1.0 million to continue implementation of this subprogram in FY 1987. These funds are needed to support monitoring program activities, reporting results to the President and Congress, and providing technical support and assistance to participating agencies.

We are requesting $2.4 million for Program Direction. This funding will provide salaries, benefits, and travel for a staff of 45 FTEs to manage the Buildings and Community Systems program.

Industry

The FY 1987 budget request for the Industrial Programs is $15.6 million. These funds will be used to carry out work in four subprograms: Waste Energy Reduction, Industrial Process Efficiency, Industrial Cogeneration, and Implementation and Deployment. The goal of these activities is to encourage improved energy efficiency in industry, which accounts for approximately 37 percent of total U.S. energy consumption. The Department's activities in the industrial area consist of a comprehensive program of carefully targeted technological research and devlopment, combined with technology of carefully targeted technological research and development, combined with technology transfer and other implementation efforts. The R&D activities focus on selected high risk ventures which are not likely to be pursued by the private sector alone and most are carried out by private institutions operating under cost-shared contracts or cooperative agreements with the Department.

The Waste Energy Reduction subprogram supports research and development on improved combustion efficiency through oxygen enrichment, improved burner designs, and sophisticated combustion controls; waste heat recovery by development of industrial heat pumps, high temperature recuperators, and ceramic materials for heat exchangers; and research into waste materials utilization and CO_2 generation and recovery. In FY 1987, $6,300,000 is requested for this subprogram.

The Industrial Process Efficiency subprogram includes laboratory testing of technology to produce steel sheet directly from molten metal; R&D for advanced sensors and control systems; advanced separation systems; and testing of electrode materials for process electrolysis. In FY 1987, $5,479,000 is requested for this subprogram. These new technologies hold great promise to reduce the energy required in basic industrial processes.

The Industrial Cogeneration subprogram focuses on research for coal/water slurry-fired diesel cogeneration systems with high electrical to thermal output and direct conversion of thermal to electrical energy. In FY 1987, $1,500,000 is requested in this area.

The Implementation and Deployment subprogram supports a number of activities for technology transfer. These include targeted workshops, seminars and technical symposia, and the development of written materials focusing on technologies developed with DOE assistance. Altogether, $500,000 is requested for this subprogram.

We are requesting $1.8 million for program direction to support 26 full-time equivalent positions to manage the Industry program.

These technologies, if successfully brought into production, can provide U.S. industry with important improvements in productivity and help regain technical leadership positions vital to our success in world markets.

Transportation

The FY 1987 budget request for the Transportation program is $19.8 million to continue R&D in four subprograms: Vehicle Propulsion R&D; Alternative Fuels Utilization; Electric and Hybrid Vehicle R&D; and Advanced Materials Development. These activities focus on the transportation sector, which accounted for approximately 27 percent of total U.S. energy consumption and, more importantly, 61 percent of U.S. petroleum consumption, up from 51 percent in 1973. The objectives of the Transportation program are to contribute to improved energy efficiency and enhanced diversity of available end-use technologies. These programs provide the technology base necessary to support private sector efforts to develop technologies which are either more efficient or serve as alternatives to those based exclusively on petroleum.

In FY 1987, $6.5 million is requested for the Vehicle Propulsion subprogram which supports research and development of high efficiency and advanced heat engine technologies. This area includes R&D on the automotive gas turbine and the heavy duty adiabatic (uncooled, minimum friction) diesel engines. The goals for both the gas turbine and the adiabatic diesel projects are to establish proofs-of-concepts and develop advanced heat engine technologies which have at least a 30 percent improvement in fuel efficiency over comparable conventional engines, meet emissions, safety, and noise standards, have alternative fuels capability, and have competitive life-cycle costs. Funds will be used to initiate a follow-on gas turbine component development project and to continue component evaluations of developed ceramic structures in a single-cylinder adiabatic diesel engine test cell, as well as the actual design by industry of a baseline multi-cylinder adiabatic diesel system.

For the Alternative Fuels Utilization subprogram, $1.3 million is requested, which is designed to establish a utilization oriented data base for alternative fuels in both contemporary and advanced heat engines. These funds will be used to conduct performance investigations into the fundamental behavior of synthetic fuels in conventional and advanced single- and multi-cylinder engines; to develop test synthetic fuels for project activities and the scientific community; and to continue data collection and analysis of the methanol-fueled vehicle fleet operations.

The Electric and Hybrid Vehicle subprogram request is $4.1 million which supports R&D activities necessary to advance the technologies of batteries and propulsion systems for passenger car and commercial van or light truck applications. These funds will be used to continue the development and laboratory testing of experimental flow-through lead-acid, sodium-sulfur, and zinc-bromine battery systems for electric vehicle application and to continue the dual-shaft a.c. propulsion system, which includes the development and vehicle integration of nickel-iron battery technology.

For the Advanced Materials Development subprogram the request is $6.5 million. This area addresses the need to develop improved materials that can withstand the high temperatures and corrosive environments of high performance energy conversion systems and, in particular, advanced transportation engines. The funds will be used to establish an industrial ceramic technology base through research on materials and processing of monolithic silicon nitride and silicon carbide, oxide matrix and dispersion toughened composites, thermal and wear zirconia-based coatings, dynamic interfaces, data base and life prediction, and International Energy Agency standardization of ceramic materials and testing. No funds are being requested for the publication and distribution of the Gas Mileage Guide. DOE will submit a legislative initiative to remove the mandatory printing and distribution of the Guide. DOE will encourage the private sector (automotive publications and newspapers) to print the fuel economy information when it is released each new model year by the Environmental Protection Agency. The information contained in the Guide is available to consumers from these sources and each new car sticker is required to include mileage ratings and comparison data.

Finally, $1.4 million is requested for 22 full-time equivalent positions to provide direction and management for the transportation programs.

Multi-Sector

The Multi-Sector Program includes the Energy Conversion and Utilization Technologies (ECUT) program, the Energy-Related Inventions Program, and the National Appropriate Technology Assistance Service (NATAS). The FY 1987 budget request for Multi-Sector includes $15.8 million for ECUT, $3.3 million for the Energy-Related Inventions Program, and $0.75 million for NATAS.

The Energy Conversion and Utilization Technologies research activities are oriented toward basic research and crosscutting R&D problems common to more than one energy consuming sector. They also provide predictive models and design tools useful to the private sector in achieving greater energy productivity. The requested funding will be used to conduct research in six subprogram areas: Combustion and Thermal Sciences, Materials, Biocatalysis, Tribology, International Research Monitoring, and Conservation Program Analysis and Planning.

In FY 1987, $4.8 million is requested for Combustion and Thermal Sciences Subprogram. Combustion research provides analytical and measuring techniques needed to understand the thermochemical and related processes that take place in the combustion of fuels and in the conversion of the released thermal energy to work. The results of this research are used to develop efficient, and reliable and clean combustion systems and devices. Thermal Sciences research develops improved thermodynamic analytical capabilities and experimentally validated computerized data bases. These are needed to provide the technological base used to improve heat transfer processes, reduce heat transfer surface area requirements, and minimize vibration induced by fluid flow through heat exchangers. In FY 1987, research will proceed to develop advanced analysis techniques and to generate a technological data base for the physical sciences of thermodynamics and heat and mass transfer.

The $5.4 million requested for Materials research will be used to investigate and modify the characteristics of high-temperature materials and to further develop the materials-by-design concept. Certain materials such as Long-Range Ordered (LRO) Alloys and Intermetallic Compounds, both of which have highly ordered atomic structures, have great potential for improving the efficiency and performance of high temperature processes, but have not yet been utilized because of their characteristic brittleness. The $2.4 million requested for Biocatalysis research will be used to establish a technological data base for the development of new techniques to manufacture industrial and commercial chemicals using biological systems analogous to conventional processes in chemical engineering.

The $2.4 million requested for the Tribology subprogram will be used for research on lubricants, friction and wear to ceramics, and coatings on machine tools that reduce heat and last longer.

Other ECUT funding requested in the FY 1987 budget--$0.8 million--will be used to assess the status of foreign technologies related to energy conservation and compare it with U.S. technologies, for supporting analyses updating the Conservation 5-year plan and for program direction.

The FY 1987 budget requests $3.3 million for the Energy-Related Inventions Program. This Program was established to evaluate the technical merits of energy-related inventions submitted to DOE and to provide technical assistance and grants to further develop promising inventions. The National Bureau of Standards (NBS) conducts evaluations through its Office of Energy-Related Inventions. Promising inventions identified by NBS are directed to DOE for further assistance to investigate sources of private sector funding or direct support where private sector support is not available. From program inception in 1974 through 1985 approximately 22,000 energy saving inventions had been evaluated by NBS. Based on NBS recommendations, 224 inventions have been awarded grants totalling $16.1 million. Of these, 36 have entered the marketplace generating sales of approximately $110 million and creating more than 900 direct jobs.

In FY 1987, the $3.3 million requested will support the analysis of approximately 1000 proposed inventions, and financial support for approximately 22 of the most promising inventions. During FY 1987, DOE will continue to work one-on-one with inventors to provide business planning assistance, and will conduct workshops which we have tested and found to be very helpful to inventors in dealing with the various and complicated aspects of commercialization.

The Appropriate Technology Program was established to support the development and demonstration of small-scale energy technologies that were matched in scale and nature to local needs. Over 2,000 projects were supported, and almost 900 development projects were completed, to advance the state-of-the-art in Appropriate Technology. In FY 1983, Congress appropriated funds to establish the National Appropriate Technology Assistance Service, to disseminate information on the energy conservation technologies developed through this program and to give expert advice and guidance in using them effectively. NATAS was established in FY 1984, and to date has received over 6,000 requests for information and assistance. The FY 1987 Budget Request contains $0.75 million for NATAS, for the continuation of information and technical assistance to individuals and small businesses and $0.5 million for program direction to support 8 FTEs.

State and Local Assistance Programs

As a result of the recent Supreme Court decision in the Exxon oil overcharge case, approximately $2.1 billion is being made available to the States and territories for use in five energy grant programs (the four State and Local Assistance Programs in DOE and the Low Income Home Energy Assistance Program in the Department of Health and Human Services). It is DOE's intention that the Court order be implemented as quickly as possible and the funds disbursed in March 1986, in accordance with the formula developed by the Economic Regulatory and Energy Information Administrations. This disbursement, together with the President's FY 1987 budget request, constitutes a near doubling of the appropriated fund levels of the past few years. An additional $750 million is expected to be made available to the States in the settlement of the Stripper Well cases before the end of FY 1986. Therefore, no appropriated grant funds will be needed for State and Local Assistance Programs.

Our $5.0 million budget request will cover DOE headquarters and field office salaries and expenses for 100 FTEs required for administering existing Federal grants and providing technical assistance.

Our goal has been to enable States and local governments to develop and maintain their own energy programs without Federal funds. To that end our efforts have focused increasingly on identifying and establishing private sector sources of funds and developing mutually beneficial working relationships between States and other groups that will help them continue and expand their most successful and highest priority activities.

The transition from activities dominated by Federal grants to State and local government and private sector funding will be completed in FY 1987. In recent years energy partnerships have been developed and opportunities for shared savings and income-generating projects demonstrated and increasingly put into practice. Federal, State, and local governments have made a concerted effort to remove institutional barriers to increased energy efficiency and encouraged use of advanced conservation technologies.

We believe that State capabilities to plan and implement programs and arrange alternative funding sources are now developed to the level at which annual Federal financial aid may be discontinued. The State and local governments are equipped with the training and experience gained in ten years of Federal support.

Our programs, conducted in partnerships with the States and local governments, established a distinguished record of achievement. Together they weatherized 1.5 million homes, upgraded energy use systems in over 53,000 institutions, and established measures to save energy in transportation, lighting, procurement and new and renovated non-Federal buildings.

There is still much to accomplish, and State and local government and private sector programs are increasing the efficient use of energy at all levels of operation as well as in residences, industrial systems, and other consumption sectors. With the influx of funds from oil overcharge cases, increased private sector involvement, innovative funding methods, and advanced conservation techniques, States will be able to continue to increase energy efficiency and the economic benefits that accrue from such accomplishments.

This completes my statement, Mr. Chairman, and I would be glad to answer any questions you might have.

SUMMARY STATEMENT

Mr. **Yates**. Miss Fitzpatrick, we will be very glad to hear from you on your budget. We will be asking questions, of course, but is there anything you want to tell us ahead of time?

Miss **Fitzpatrick**. I would like my full statement in the record.

Mr. **Yates**. It has already been placed in the record.

Miss **Fitzpatrick**. If I may, I would like to summarize it briefly.

Mr. **Yates**. Okay.

Miss **Fitzpatrick**. Mr. Chairman, I appreciate the opportunity to appear before you today to discuss our FY 1987 budget request for conservation programs. The budget for these programs is consistent with the goals and objectives of national energy policy and is fully responsive to the administration and congressional goals of deficit reduction. The administration's overall energy goal is to foster an adequate supply of energy at reasonable cost.

Deficit reduction is perhaps the preeminent domestic economic imperative today, and the department fully recognizes that fact. For this reason, we are doing all we can to concentrate increasingly scarce resources on those programs and projects that directly fulfill a Federal responsibility and truly require Federal assistance. If we are to achieve our overriding goal of deficit reduction, we have no choice but to concentrate resources where they show promise of bringing the greatest benefits.

We have had a number of successes in the last year, and in order to continue to contribute to the achievement of our goals, the fiscal year 1987 budget request for energy conservation programs will continue to support a mix of technologies.

I would like to summarize the budget requests briefly, beginning with the Office of Conservation and followed by the State and Local Assistance Programs.

CONSERVATION BUDGET

The fiscal year 1987 budget request for conservation research and development and regulatory programs is $71.2 million. Let me give just a few examples of the types of activities that will be undertaken. In the Buildings and Community Systems Program, we will continue our investigation of ways to maintain acceptable air quality in energy efficient buildings. These efforts will include studies of radon entry and mitigation methods.

In cooperation with industry, we will continue research to advance technologies in thermally activated heat pumps and advanced lighting.

Through our Federal Energy Management Program, we will continue a coordinated effort to improve the efficiency of energy use by Federal agencies and to conserve scarce fuels.

The budget request for Industrial Programs will be used to continue research, including thin strip casting tests, high temperature recuperators and heat pumps, advanced sensors and process controls, direct thermal-to-electrical conversion, waste conversion and several advanced separation processes.

Our Transportation Research Program will include continuation of the heavy duty adiabatic diesel project. We will continue component evaluations of the design of a multi-cylinder adiabatic diesel system.

The budget includes the Energy-Related Inventions Program, which was established to evaluate the technical merits of energy-related inventions submitted to DOE and to provide technical assistance and grants to further develop promising inventions. We expect to evaluate roughly 1,000 inventions and provide technical assistance and grants to some two dozen inventors.

In the Multi-Sector Program, we plan to complete experimentation and modeling of the joining of ceramic to ceramic, and ceramic to metal. This is an important element in providing reliable ceramic engines for transportation and other uses.

The budget request also provides for continued investigation to expand our understanding of the relationships between bonding and structure, at the atomic level in selected materials related to conservation. One of the results of this work could be the development of new ultra high temperature materials.

STATE AND LOCAL ASSISTANCE BUDGET

In our budget request for State and Local Assistance Programs, we are acting as a result of the recent Supreme Court decision in the Exxon Oil overcharge case, in which $2.1 billion has been distributed to the states and territories for use in five energy grant programs. Over the last several years, the state capabilities to plan and implement programs and arrange alternative funding sources are now developed to the level at which annual Federal financial assistance in grants may be discontinued. This is especially true in view of the oil overcharge funds that have been made available to them.

The state and local governments are equipped with the training and experience gained after ten years of Federal support. Therefore, we have not asked for any appropriated grant funds. Our $5 million budget request will cover DOE personnel which are required to administer existing Federal grants and to provide continuing technical assistance to the states.

Mr. Chairman, I believe that this budget will contribute to increased energy supply diversity and end use efficiency and will serve to promote increased competition in the marketplace.

This budget request maintains program goals and will allow us to address the items of highest priority in research and development in the field of energy conservation, thereby contributing to the accomplishment of our national goal of fostering an adequate supply of energy at reasonable cost.

This is a budget which I believe seriously recognizes today's fiscal responsibilities, as well as tomorrow's anticipated needs and will build on the foundation of energy stability and security that we, working together with the Congress, have laid in the last five years.

Mr. Chairman, we are pleased to have the advice that we have received from the Congress and, in particular, this subcommittee, and we thank you for the opportunity to appear here today.

BUDGET PRIORITIES

Mr. **Yates**. Thank you for your statement. I am attracted by your effort to anticipate tomorrow's anticipated needs. What are tomorrow's anticipated needs?

Miss **Fitzpatrick**. I think, Mr. Chairman, that we have to obviously begin a stronger effort in the private sector to find alternatives to the use of oil. All the projections that we have in hand today are that our domestic oil supplies, over the long-term, and I am talking in 10 to 15 years, will become a smaller and smaller share of what is available in the world, and the world oil supplies, known reserves, are going to be concentrated in areas that present an insecure source for us.

That is why I think we have to make a stronger effort to put to work the technologies that we already have available and to complete the key programs in research that will give us greater diversity, especially in the transportation field.

Mr. **Yates**. You are making a good argument against your budget, aren't you? Why, then, are you cutting conservation so much? If you foresee the need for greater energy use in the future, why isn't conservation an integral part of that activity? And if that is true, why are you cutting it so much?

Miss **Fitzpatrick**. Mr. Chairman, I would be the first to say our budget request is driven very largely by fiscal constraints that came from the balancing of all demands being placed on the Government. What we have done in response to that is to focus our program on the most promising research projects, those that have the highest potential for success and for reducing our energy consumption needs.

Mr. **Yates**. Out of a budget request of $427 million, adjusted for sequestration last year, this year you are cutting 90 percent of your budget. Why don't you just close up shop and do nothing? Isn't that what the administration wants to do, to eliminate the Department of Energy?

In fact, you are back to Dr. Edward's time, aren't you? He had a self-imposed mandate to close down the Department of Energy.

Miss **Fitzpatrick**. That is not our policy, Mr. Chairman, at all.

Mr. **Yates**. It is a ninety percent acceptance of that policy.

Miss **Fitzpatrick**. Yes. Of course more than $250 million of that reduction is the grants programs. The states have now received almost ten times that much in Exxon funds, which have already been made available to them to use in those programs.

Mr. **Yates**. Even with this argument, you talk about the grants, you are using $36 million of last year's money.

Miss **Fitzpatrick**. That is correct

RESEARCH AND DEVELOPMENT

Mr. **Yates**. That is a cutback on your grants program. Look at the reduction in research and development from $173 million to $69 million.

Miss **Fitzpatrick**. That is true.

Mr. **Yates**. Those are not state——

Miss **Fitzpatrick**. That is true. That is a substantial cut.

Mr. **Yates**. Does that mean the programs aren't any good?

Miss FITZPATRICK. No, sir, it means that we have been given fiscal targets we had to meet, and within those targets, we chose to do the things that are most useful to the country. We tried to focus our research on those areas that show the most promise.

Now, we had been, in our research priorities, very often pursuing two or three possibilities to achieve the same end. For example, two or three different kinds of batteries, we hope to have at least one of them developed into an electric vehicle battery that will be acceptable. We have progressed far enough in that research so that we are able to pick out the one that has the greatest potential. So there is a cutback in that area, which I think probably would have happened anyway.

The same thing is true with some other programs. For example, the High Temperature Materials Laboratory, which has been a substantial budget item for several years, has completed its funding as planned and is expected to open early in 1987. The automotive gas turbine engine project, in which we have been engaged in a very expensive actual building of two separate gas turbine models, has now been completed. During fiscal year 1986, those engines are expected to be run at full design, temperatures and speeds.

In any event, we would not have been asking for substantial funding for those programs that we have had in the past. I think naturally, just by the nature of the programs, there would have been some decrease in our funding request. But, as I say, a substantial decrease beyond that was necessitated by fiscal constraints and our need to meet the deficit reduction goals.

Mr. YATES. You asked OMB for $150 million for conservation research and development.

Miss FITZPATRICK. Yes, sir.

Mr. YATES. OMB granted you $71 million.

Miss FITZPATRICK. That is correct.

Mr. YATES. Roughly a half.

What programs did you ask for that are being eliminated?

Miss FITZPATRICK. Could I provide that for the record, please, Mr. Chairman? It is rather extensive.

TRANSPORTATION BUDGET

Mr. YATES. I know, but I would like to know some of them, anyway. Let's talk about transportation. You asked for $43 million, which was a $12 million cut from fiscal year 1986, which is substantial in itself, and you received $19.8 million. What programs in transportation make up the difference of $20 million?

Miss FITZPATRICK. Under our original OMB request, we wanted more funds to be available to continue the component development in the automotive gas turbine engines.

Mr. YATES. How much was that?

Miss FITZPATRICK. About $4 million.

Mr. YATES. You still have $16 million to go?

Miss FITZPATRICK. We also wanted to meet the phase-up of the single cylinder and interface projects in the second phase for the adiabatic diesel engine.

Mr. YATES. How much was that?

Miss **Fitzpatrick**. That would have been about $2.5 million.

Mr. **Yates**. That is $6 million, $6.5 million. What about the rest of them?

Miss **Fitzpatrick**. There would have been about $2 million that would have gone into the vehicle propulsion technologies. This would be mostly under technology assessment and transfer. This is our analytical planning and number of workshops and other work that we do with industry to give them the results of our R&D. As we are reducing the amount of R&D we are doing, we can also cut back on the activities that we have to transfer those results. We have also, as a line item, not put so much into this because we are integrating the cost of doing that into each program. We also have about a $1 million cut, which would have gone otherwise into a proof-of-concept evaluation of heavy duty diesels and using methanol fuel.

We also had planned to do some work on use of methane in diesel engines and some studies on corrosion effects of methane in storage tanks. Also, the nickel/iron battery technology has been integrated into an existing contract to complete the dry propulsion system in a small van, and that is not being carried as a separate item.

Those are the major items. The ETX–II, which is an electric vehicle propulsion system we are dropping from two systems to one. We will continue with one system, and that is a change of about $2.5 million.

Mr. **Yates**. Have the R&D programs been successful?

Miss **Fitzpatrick**. Yes, I think they have.

Mr. **Yates**. Can you estimate how much energy they have saved? Has anybody made a study as to how much energy has been saved as a result of the R&D program?

Miss **Fitzpatrick**. Yes. We have made studies on how much we can save. It is substantial. We think that in the next 20 years, if our R&D results are used at the projected rate by industry and if we continue to have reasonable success, we think in 15 to 20 years, we could reduce our energy consumption by another 14, 15 quads from what it would be otherwise. So there is a payoff on the R&D.

BATTERY DEVELOPMENT

Mr. **Yates**. Tell us about what progress you are making in connection with the batteries. Are you anywhere near the development of a battery that can be used in an electric vehicle?

Miss **Fitzpatrick**. Yes. We have a couple batteries that are more successful than anything in the past. We have a gel cell and flow battery that is showing high efficiency. We are integrating a nickel/iron battery into a small van system, and we are concentrating our advanced research now on a sodium/sulphur battery. That battery shows potential of increasing the energy density by a factor of about four and the power density by approximately the same factor.

This means that we can have a battery that would fit into a vehicle and be an acceptable weight and size that would increase the range of the vehicle by about a factor of four over what we have available to date.

Mr. **Yates**. What is that in terms of miles?

Miss **Fitzpatrick**. What is available today is 60 to 100 miles, that means we are talking about a several hundred mile, 200, 300-mile vehicle.

Mr. **Yates**. When do you anticipate knowing the results of that research?

Miss **Fitzpatrick**. We began a three-year cooperative research program in which EPRI also cooperates. We have a contract with Lucas Chloride, and we are hoping to have the results of that within a couple of years.

Mr. **Yates**. Which are the battery developments you are dropping?

Miss **Fitzpatrick**. We are not continuing in the transportation program—we have integrated the nickel/iron battery, we will not continue direct development of this battery. We are now working on its installation in a full propulsion system in a small van. We are not continuing with nickel/cadmium batteries. All of these batteries showed less potential than the others.

Excuse me, Mr. Chairman, I confused the Transportation Program zinc/bromine battery work with one in another program in the energy and water appropriation. We are continuing some work on the zinc/bromine program, and we had some lead/acid battery research.

Mr. **Yates**. I think we ought to put this schedule into the record.

Miss **Fitzpatrick**. Yes, I think that contains a good deal of information.

[The information follows:]

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Transportation

Key Activity Summary
Vehicle Propulsion R&D
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986 Congressional Request	Estimated Activities During FY 1986 Congressional Changes	Planned Activities During FY 1987
Automotive Gas Turbine	Complete proof-of-concept automotive gas turbine engine development with two industry teams reaching engine dynamometer testing of completely ceramized configuration. ($15,000)	No change from Congressional Request. ($15,000)	Continue ceramic component development using industry teams and engine test beds. ($5,000)
Automotive Stirling Engine	Program completed in FY 1985. ($0)	Complete MOD II engine development and assemble fully operational engines to ascertain if cost and efficiency goals can be met. ($15,000)	No activity. ($0)
Heavy Duty Transport (Adiabatic Diesel)	Initiate component evaluations of developed ceramic components in single-cylinder test cell and utilize results for second stage	No change from Congressional Request.	Continue ceramic component evaluations in single-cylinder test engines; complete performance analysis of baseline adiabatic engine design, complete

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Transportation

Key Activity Summary
Vehicle Propulsion R&D (cont.)
(dollars in thousands)

Key Activities	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Heavy Duty Transport (Adiabatic Diesel) (cont.)	component developments; complete design of baseline engine configurations; initiate industry design of multi-cylinder heavy duty proof-of-concept adiabatic diesel engine. ($3,000)	($3,000)	initial experimental emissions evaluation; complete first phase upper-cylinder interface projects and initiate second phase activities. Initiate second stage ceramic component development and test projects. ($5,000)
Technology Assessment, and Transfer	Continue vehicle propulsion technology assessments in industry and government; expand technology transfer activities, including conferences, workshops, publications, etc., to assure transfer of technology developed within DOE to other government agencies and industry. ($2,100)	Continue the program at FY 1985 levels. ($1,470)	Continue vehicle propulsion technology assessments in industry and government; continue technology transfer activities, including conferences, workshops, publications, etc., to assure transfer of technology developed within DOE to other government agencies and industry. ($2,000)

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Key Activity Summary
Electric and Hybrid Vehicle R&D
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986 Congressional Request	Estimated Activities During FY 1986 Congressional Changes	Planned Activities During FY 1987
Electric Vehicle Battery R&D	Continue development of lead-acid and nickel-iron proof-of-concept complete battery systems, conduct R&D on the flow-through and immobilized electrolyte effort of lead-acid battery. ($1,400)	Conduct research on lead-acid, zinc-bromine, nickel-zinc, and iron-air battery concepts which can lead to longer vehicle ranges. ($2,900)	Continue development of optimized flow-through electrolyte lead-acid battery technology; continue development of nickel-iron battery technology with emphasis on cost reduction of nickel electrodes without degradation of battery performance. ($1,000)
	Complete development of packaging, thermal management and optimum cell and module configuration analysis of sodium-sulfur battery for EV application. (Funded in FY 1985)	No change from Congressional Request. ($0)	Continue development of sodium-sulfur and zinc-bromine battery technologies for electric vehicle application based on the core technology developments by the Energy Storage Division. ($3,000)

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Transportation

Key Activity Summary
Electric and Hybrid Vehicle R&D (cont.)
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Electric Vehicle Battery R&D (cont.)	Continue vehicle application studies to identify potential promising advanced battery systems and concepts.	Continue work on nickel-cadmium batteries.	No activity.
	(Funded in FY 1985)	($1,000)	($0)
Electric Vehicle Propulsion Systems	Complete first generation of single-shaft a.c. propulsion system and evaluation of advanced battery systems. Continue development of next generation of the single-shaft a.c. propulsion system including an improved a.c. permanent magnet motor and control system and advanced battery system.	Use funds becoming available from the electric vehicle loan program to develop an advanced vehicle propulsion system, the ETX-II.	Continue development of advanced single-shaft a.c. propulsion system technologies identified in FY 1986. Integrate into a proof-of-concept test bed van with an advanced battery system.
	($775)	($775 + $2,500 reprogrammed from loan program)	($2,500)

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Transportation

Key Activity Summary
Electric and Hybrid Vehicle R&D (cont.)
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986 Congressional Request	Estimated Activities During FY 1986 Congressional Changes	Planned Activities During FY 1987
Electric Vehicle Propulsion Systems (cont.)	Continue advanced dual-shaft a.c. propulsion system technology development program. ($2,000)	No change from Congressional Request. ($2,000)	Continue advanced dual-shaft a.c. propulsion system technology for proof-of-concept test-bed van with an advanced state-of-the-art battery. Program will be completed in FY 1988 with delivery of proof-of-concept propulsion system in van test bed. ($2,000)
	Complete hybrid alternative systems studies. (Funded in prior fiscal years)	No change from Congressional Request. ($0)	Initiate the development of the most promising advanced hybrid vehicle technology concepts identified in the evaluation begun in FY 1985 through verification of computer simulations and analysis. ($500)

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Transportation

Key Activity Summary
Electric and Hybrid Vehicle R&D (cont.)
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Test and Evaluation	Continue laboratory and in-vehicle dynamometer testing and analysis of new battery and powertrain technologies. Identify charge/discharge sensitivity of immobilized electrolyte batteries to temperature variations. Conduct performance characterization testing of the prototype field test van developed jointly by DOE and EPRI.	No change from Congressional Request.	Continue laboratory and in-vehicle dynamometer testing and analysis of new battery, powertrain and vehicle technologies at the Idaho National Engineering Laboratory. Battery systems to be evaluated include sodium-sulfur and zinc-bromine, improved nickel-iron, and absorbed electrolyte lead-acid. Complete performance characterization testing of the DOE/EPRI field test van and begin testing of ETX-I a.c. system. Continue testing of battery systems sensitivity to temperature and adverse environments. Examine charging techniques and unique woven-wire grids for increasing the life of lead-acid batteries.
	($1,450)	($1,450)	($1,900)

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Key Activity Summary
Electric and Hybrid Vehicle R&D (cont.)
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Test and Evaluation (cont.)	Continue collection and analysis of data with emphasis on the viability of new technologies integrated into operational fleet vehicles. Continue to provide technical support to electric vehicle site operators. ($250)	Increase support for the electric vehicle user task force which conducts cost-shared testing of improvements in electric vehicle components in actual driving situations. ($1,100)	Continue collection and analysis of engineering and operational data from public and private sector fleet vehicles. Continue the evaluation of new technologies in fleet vehicles through cost-shared contracts with the Site Operators' User Task Force, including advanced lead-acid and nickel-iron batteries, flame arrestor devices, d.c. to d.c. converters, and fully integrated battery management systems; conduct laboratory evaluation and analyses of new technologies prior to fleet integration. ($1,000)
Technology Assessments and Transfer	Continue technology transfer activities including a Contractor	No change from Congressional Request.	Continue technology transfer activities including participation in national

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Transportation

Key Activity Summary
Electric and Hybrid Vehicle R&D (cont.)
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Technology Assessments and Transfer (cont.)	Coordination Meeting for vehicle users, manufacturers, and the research community to discuss current progress and future coordinated R&D efforts; conduct workshops on battery maintenance training for new technologies; hold seminars for the evaluation of advanced EV technologies and disseminate information in a timely fashion.		technical conferences, the annual Contractor Coordination Meeting and workshops on battery maintenance and new technology operation. Hold seminars with industry to evaluate advanced EV technologies under development.
	($200)	($200)	($150)

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Transportation

Key Activity Summary
Transportation Systems Utilization
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Gas Mileage Guide	Publish and distribute the 1987 model year Gas Mileage Guide to 26,000 car and light truck dealers throughout the Nation, to assist consumers in the purchase of fuel efficient vehicles. ($700)	No change from Congressional Request. ($700)	Publish and distribute the 1988 model year Gas Mileage Guide. ($700)
Driver Awareness Training	No activity. ($0)	Continue the Driver awareness training program which provides training to a core of drivers who can further train others in driving techniques that save fuel. ($250)	No activity. ($0)
Analysis and Assessment	Collect, analyze and present transportation and energy data in the	Reduce technology transfer activity.	Collect, assemble, and present transportation and energy data in the

Department of Energy
FY 1987 OMB Budget
Transportation

Key Activity Summary
Transportation Systems Utilization (cont.)
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986 Congressional Request	Congressional Changes	Planned Activities During FY 1987
Analysis and Assessment (cont.)	form of monthly data reports, an annual edition of the Transportation Energy Data Book and other energy impact information as required; assess market conditions for fuel efficient technologies; prepare baseline projections of future transportation energy use for Office program assessments. ($500)	($250)	form of monthly data reports, an annual edition of the Transportation Energy Data Book and other energy impact information as required; assess market conditions for fuel efficient technologies; prepare baseline projections of future transportation energy use for Office program assessments. ($500)

Department of Energy
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Transportation

Key Activity Summary
Alternative Fuels Utilization,
(dollars in thousands) .

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Alcohols	Collect and analyze data on Federal methanol-fueled vehicles. (Funded in FY 1985)	No change from Congressional Request. ($0)	Continue data collection and analysis on Federal methanol-fueled vehicles. Initiate proof-of-concept evaluation of heavy duty uncooled diesel operations using methanol fuel. ($1,200)
Synthetic Fuels	Continue performance, emissions, wear, and optimization investigations on conventional and advanced engines using synthetic fuels; perform single- and multi-cylinder dynamometer tests; update information data base and industry interface; provide industry and scientific community with standardized test fuels. ($1,400)	No change from Congressional Request. ($1,400)	Continue to generate data on conventional and advanced single- and multi-cylinder engines using synthetic fuels; continue work on defining ignition quality (cetane substitute) of synthetic fuels; continue to provide industry and scientific community with standardized test fuels. ($1,500,

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Transportation

Key Activity Summary
Alternative Fuels Utilization (cont.)
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986 Congressional Request	Congressional Changes	Planned Activities During FY 1987
Methane (Gaseous Fuels)	Continue investigation of technology and institutional barriers; conduct performance and emissions evaluations and update information data base. ($200)	No change from Congressional Request. ($200)	Complete update of data base on use of methane in diesel engines and corrosion effects on storage tanks. ($200)

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Key Activity Summary
Advanced Materials Development
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986 Congressional Request	Congressional Changes	Planned Activities During FY 1987
Ceramic and Ceramic Composites	Continue ceramic technology research projects in materials and processing, ceramic composites, thermal and wear coatings, joining, design methodology and monolithic structure life testing; expand projects to include scale-up of improved powder synthesis, composites, and life prediction for composite materials.	No change from Congressional Request.	Continue phased activities in existing contracts and research projects and initiate some new research and scale-up projects in accordance with the Ceramic Technology for Advanced Heat Engines Program Plan. Program activities will include projects on materials and processing of oxide matrix composites, thermal and wear zirconia-based coatings, and ceramic-to-metal and ceramic-to-ceramic joining; materials design methodology for dynamic interfaces and code design/statistics; data base/life prediction for structural qualification, time dependent behavior, life prediction, environmental effects, fracture mechanics, and NDE development; and IEA standardization. New

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Transportation

Key Activity Summary
Advanced Materials Development (cont.)
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Ceramic and Ceramic Composites (cont.)	($9,290)	($9,290)	initiative will include a scale-up of powder process synthesis. ($13,000)

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Transportation

Key Activity Summary
Capital Equipment
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Advanced Materials Development	Complete acquisition of unique laboratory equipment to support the advanced materials development program. (Funded in FY 1985)	No change from Congressional Request. ($0)	Procure laboratory instrumentation and equipment to support ceramics research activities for characterization and testing of developed materials and composites and new processing methodologies. ($1,000)

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Key Activity Summary
High Temperature Materials Laboratory
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
High Temperature Materials Laboratory	Required funding to complete construction. ($2,700)	No change from Congressional Request. ($2,700)	Activity completed with prior years' unexpended balances. ($0)
	Continue pre-operational support activities, i.e., set up user centers operational procedures; manage acquisition of research equipment; design research staff requirements. ($310)	No change from Congressional Request. ($310)	No activity. ($0)

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Key Activity Summary
Program Direction
(dollars in thousands)

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Program Direction	Provide support for 28 FTE positions to develop strategies, plans and resource requirements, and provide the management necessary to conduct research, development, test and evaluation programs. ($1,700)	No change from Congressional Request. ($1,775)	Provide support for 28 FTE positions to develop strategies, plans and resource requirements, and provide the management necessary to conduct research, development, test and evaluation programs. ($1,800)

DEPARTMENT OF ENERGY

FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Waste Energy Reduction
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Improved Combustion Efficiency Objective: To increase overall efficiency of combustion through increased flame temperature, decreased excess air, and higher combustion air preheat.	Research in oxygen enriched air, high temperature combustion air and low energy fuels. Field test of selected oxygen enriched combustion systems. Conduct concept/feasibility studies on selected techniques for burner controls and instrumentation including corrosion and fouling detection. ($500)	Develop oxygen enriched combustion system controls for various direct heat process furnaces. Develop a design data base for modified burners for low grade fuel combustion. Conduct studies on selected new concepts on heat transfer improvement to minimize stack gas temperature. Develop designs and test plan for high potential combustion control concepts and corrosion/fouling control techniques. ($1,000)
Advanced Coal Burner Development Objective: Develop coal-fired equipment that will retrofit existing oil-fired boilers without baghouses, (Joint project with Fossil Energy)	Bench scale testing of selected innovative burner concepts: low NO_x burners, burners which operate at very high temperature preheated air. ($600)	Fabricate pilot scale innovative coal combustor units for a pulse combustor and a vortex containment combustor and conduct engineering tests. Evaluate test results. ($ 500)

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FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Waste Energy Reduction
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Advanced High Temperature Recuperators Objective: To develop high effectiveness heat exchangers that operate in various environments and can be produced at relatively low cost.	Development of non-destructive test methods and service life prediction methods for ceramic heat exchanger components operating in severe environments. Develop waste stream characterization methods for high temperature dirty waste streams and conduct preliminary characterization of a selected stream. Fabricate selected advanced heat exchangers and evaluate operation in dirty, high temperature streams. Development of technology to produce low cost ceramic powders and fabricate complex ceramic heat exchanger shapes in a cost effective manner. Complete testing and evaluation of fluid bed ceramic distributor plates in severe environments. ($3,000)	Complete development of non-destructive flaw detection techniques. Subject known flawed samples to laboratory thermal environments to generate lifetime prediction techniques. Continue test and evaluation of selected advanced heat exchangers. Explore improved fabrication construction, and assembly techniques for reduced costs. Continue development of composite ceramic materials for high temperature heat exchanger applications and new methods of component manufacture (woven/cvd coated gel casting). Retrofit a host site fluid bed heat exchanger with an advanced distributor plate for higher temperature operation. ($2,400)

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FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Waste Energy Reduction
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Advanced High Temperature Industrial Heat Pumps Objective: To integrate heat pumps into industrial process cycles to efficiently upgrade thermal energy for higher temperature process requirements.	Evaluate concepts for various types of heat pump systems and evaluate components along with alternative working fluids. Conduct design studies of these concepts. Prepare preliminary designs for several systems with alternative working fluids. Evaluate expected performance of these systems with various working fluids, materials compatibility, etc. Assessment of "pinch" network analysis and its application to process industries to locate points of integration of heat pumps into the process cycles. Analyze which type of heat pump systems best match process requirements and select suitable processes for detail heat pump system studies.	Build laboratory breadboard components for a magnetic heat pump concept and a heat of reaction system concept. Perform tests to verify analytical model results. Evaluate chemical heat pump system improvements based on network analysis and initiate design studies for component development. Initiate the design and fabrication of advanced heat pump components.
	($2,500)	($1,600)

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FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Waste Energy Reduction
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Liquid/Gaseous/Solid Waste Conversion Objective: To utilize industrial waste materials (gases, liquids/solids) as feedstocks, fuels or other usable forms.	Conduct high rate reactor tests on industry supplied low solids content liquid waste materials. Investigate plasma pyrolysis of high solids content industrial liquid waste materials. Continue biostrain enhancement activity to improve conversion of waste to fuel. Investigate feasibility of waste CO and H_2 conversion to chemicals. ($900)	Continue high rate reactor tests with enhanced biostrains on paper mill wastes to produce methane for fuel use. Examine use of membranes for separations of high oil or organic content waste streams and economics of separation. Continue evaluation of the use of hydrides for recovery of hydrogen from exhaust gases in chemical and petroleum processing plants. Conduct feasibility laboratory tests of utilizing waste CO and methanol to produce intermediate chemical feedstock. Continue activities for the utilization of various solid wastes (asphalt roofing, tires, auto shredder waste, textile wastes) as fuels or in industrial products. ($1,200)

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FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Waste Energy Reduction
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Utilization of Waste CO_2 Stack Gas Objective: To utilize CO_2 waste stack gas as a product and for enhanced oil recovery.	Analyze potential for cost-shared field tests. Conduct engineering and systems studies to locate potential CO_2 generation sites and use points for CO_2. Start 6 MM BTU combustion test. ($300)	Complete testing and evaluation of CO_2-O_2 enriched combustion in a 6 MM BTU furnace to ascertain cold wall radiant effect and tube deposition effects. Configure a full-scale proof of concept system, start system design and obtain industry endorsement for conducting full-scale testing. ($1,000)
Forest Waste Utilization Objective: To more effectively utilize forest and agricultural residue and waste as industrial fuels.	Complete laboratory support for process development to improve yields of diesel fuel from cellulosics/polymers. Complete laboratory compression testing of wood residue samples under simulated operating conditions for degree of dryness obtained, operational problems encountered, etc. ($ 300)	Evaluate potential for producing adhesives from waste wood and for producing high value chemicals from waste wood derived synthesis gases. ($ 400)
National Laboratory & Analytical Support	($4,156)	($4,556)
Total: Waste Energy Reduction	$12,256	$12,656

DEPARTMENT OF ENERGY

FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Industrial Cogeneration
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Advanced Topping Cycle Systems Objective: Develop and test highly efficient cogeneration systems with high electrical to thermal ratio output and which utilize alternative fuels.	Complete coal combustion topping tests for externally-fired Brayton system. Conduct laboratory tests utilizing waste fuels. Initiate fabrication of air heater test sections. Perform a design study for use of a lower temperature gas turbine to eliminate a topping combustor. Complete development and testing of selected components for a steam diesel test engine. Initiate the study on diesel engine component wear. Complete design of generic requirements for the test engine installation. Establish an industry interaction group to review test results and share in test engine planning. ($3,400)	Complete fabrication and installation of air heater test sections at Rockwell test facility. Perform facility modifications to prepare for tests. Complete the design study for the low temperature gas turbine and the economic assessment. Develop a computer model on controls simulation. Determine a site location for the steam diesel test engine and complete a design for installation and operation of the test engine. Conduct laboratory rheology studies and testing of coal slurries to overcome limitations of pumping various mixtures to the engine cylinders. ($3,500)

DEPARTMENT OF ENERGY

FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Industrial Cogeneration
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Thermal to Electrical Energy Conversion Objective: Develop systems for conversion of thermal energy to direct current.	Design a larger more efficient thermionic diode which is more economic to manufacture. Build engineering prototypes and conduct laboratory tests. Evaluate new materials and modes of operation to improve output. Design and fabricate a 1,000 watt sodium heat engine laboratory unit. ($1,100)	Fabricate full-scale larger thermionic diode (approx. 5 in. diam.) and conduct laboratory performance tests. Provide an analysis of economics comparing the new design with the present 2" dia. diode. Conduct development testing of the 1,000 watt sodium heat engine laboratory model. Compare with predicted performance. ($1,000)
Advanced Bottoming Cycle Systems Objective: Develop and test cogeneration systems that operate using thermal process waste energy to produce electricity.	Complete performance evaluation of a composite material biphase separator component in a model test unit. Continue laboratory testing of ORC fluids. ($ 200)	Complete laboratory testing of first six ORC working fluids. Design and fabricate an improved vaporizer for performance testing on a 600 Kw ORC test unit. ($ 500)
Total: Industrial Cogeneration	$4,700	$ 5,000

DEPARTMENT OF ENERGY

FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Industrial Process Efficiency
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Process Electrolysis Objective: Conserve electricity by developing systems for more efficient electrolytic reduction of metals.	Continue development, small cell testing and characterization of potential inert anode materials. Determine operating range and optimum conditions for candidate materials. Continue evaluation of cathode failure mechanisms. Continue TiB_2 attachment work. ($1,500)	Determine and test most promising inert anode and stable cathode fabrication and attachment techniques. Design and determine both dynamics of 5 to 10KA self-sustained cell with inert materials and close ACD. Complete studies of bath chemical structure. Complete bench scale physical chemistry study of carbothermic process. ($1,000)
Materials Processing Objective: Reduce energy requirements in melting, forming, rolling and fabrication of materials.	Continue procurement of lab testing equipment for strip casting. Complete testing of molten steel feed alternatives and make selection of feeding system. Install 17 in moving mold slab casting test equipment. Complete lab testing of wheel casting approach to casting thin steel strip. ($8,000)	Complete thin slab testing using vertical and horizontal moving mold casters and evaluate. Select casting method for final design of pilot plant. Based on lab results of wheel casting, assess technical and economic feasibility of this technology for producing high volume steel products. ($9,000)

DEPARTMEI ENERGY

FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Industrial Process Efficiency
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Sensors and Controls Objective: To develop on line sensing devices to improve measurement of process parameters. Develop systems to enable more accurate and timely control of processes.	Develop sensors for on-line control of industrial processes that operate in extreme conditions of temperature, corrosive environment and pressures. E.g., molten steel analysis, 2 phase flow measurement, thermal profile of hot solids, lignin assay, boiler combustion and alumina concentration. Evaluate other sensor requirements for improved process efficiency and develop a program plan to conduct R&D necessary for their development. Analyze sensor needs for hierarchical control of industrial processes such as steel and paper mills. ($2,000)	Complete installation of in-situ analysis sensors at steel plant sites and testing of selected sensors at paper industry plant sites. Continue development of additional sensors, including ones with potential applications in humidity control, alumina reduction cells and in-process property analysis. ($2,500)
Coatings and Adhesives Objective: Reduce the energy required to apply coatings and dyes to various surfaces.	Complete testing of amorphous metallic coating for adhesion, stability and corrosion resistance. Coat test specimens for exposure testing in an industrial environment. ($200)	Test dry coating system for textiles. Analyze potential for extension of technology to other substrates. Test UV curable coating for application on various materials. ($500)

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FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Industrial Process Efficiency
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Separations Research Objective: To develop more efficient technologies and equipment for accomplishing separation/concentration in a variety of industries.	Lab and bench scale tests of freeze separation processes for application to various foods, chemicals and black liquor. Initiate on-site membrane tests for separations applications in food, petrochemical and other industries. Continue lab and bench scale tests for concentration of caustic solutions with advanced membranes and continue testing of working substances for a tubeless evaporator. ($1,800)	Complete bench scale tests and proof of concept tests on hydrate freeze process for sugar beet juices. Complete on site testing of membranes for organic stream separations, concentrations of various foods and caustic solutions. Complete development of working substances for a tubeless evaporation process. Continue research on black liquor properties, concentration and combustion. Develop continuous chromatographic separation technology. Continue laboratory and bench scale research on energy efficient mechanical and thermal drying processes. ($3,000)
Total - Industrial Process Efficiency	$13,500	$ 16,000

DEPARTMENT OF ENERGY

FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Implementation & Deployment
($000)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Industrial Reporting Program Objective: Carry our legislative mandate, and establish basis for joint activities with industry to improve industrial energy productivity.	Continue receipt and analysis of reports on energy efficiency improvement and recovered materials, which are required to be submitted by industry annually. Publish DOE annual report on industrial energy efficiency improvement. ($300)	Continue receipt and analysis of reports on energy efficiency improvement and recovered materials, which are required to be submitted by industry annually. Publish DOE annual report on industrial energy efficiency improvement. ($300)
Energy Analysis and Diagnostic Centers Objective: (1) Define energy conservation opportunities for small and medium size firms. (2) From results of completed audits, develop case studies of conservation opportunities that can be pursued by small and medium sized firms.	Continuation of program to conduct audits, with 12 participating universities. Evaluate program results and rotate program participation as appropriate among different schools. ($1,500)	Continuation of program to conduct audits, with 12 participating universities. Evaluate program results and rotate program participation as appropriate among different schools. ($1,600)

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FY 1987 DEPARTMENTAL BUDGET REQUEST

KEY ACTIVITY SUMMARY

Implementation & Deployment
($00)

Key Activity	Planned Activities During FY 1986	Planned Activities During FY 1987
Technology and Information Transfer: Objective: Provide information on costs and benefits to industry of implementing new technologies or practices which are more energy efficient.	Provide support in the conduct of workshops, seminars, and technical symposia on industrial energy conservation. Particular focus to be on technologies developed with DOE assistance. Develop, publish, and distribute written materials which address specific energy-saving technologies, as well as overall energy management for major industrial sectors. ($1,400)	Provide support in the conduct of workshops, seminars, and technical symposia on industrial energy conservation. Particular focus to be on technologies developed with DOE assistance. Develop, publish, and distribute written materials which address specific energy-saving technologies, as well as overall energy management for major industrial sectors. ($1,500)
Total-Implementation and Deployment	$ 3,200	$ 3,400
Program Direction	$ 1,927	$ 1,844
Capital Equipment	-	-
TOTAL: Industrial Energy Conservation	$35,583	$38,483

DEPARTMENT OF ENERGY

FY 1987 OMB BUDGET

BUILDINGS AND COMMUNITY SYSTEMS

KEY ACTIVITY SUMMARY
(Dollars in Millions)

KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
BUILDING SYSTEMS			
Building Materials	Continue basic properties studies of insulation materials; complete loose-fill studies. Complete foamed board aging study and initiate moisture absorption/transmission study of foamed board insulation. Complete assessments of masonry block products and low-density concretes; begin testing low-density concretes. Initiate study of wood wetting and drying cycle impacts in construction. Initiate testing of reflective foil systems, and compare results with modeling data. Extend moisture impacts studies to include other building materials based on ASHRAE recommendations. Begin testing candidate improved standard reference materials (1.0m GHP); verify precision and accuracy of high temperature GHP. Continue model development with verification through experimental testing using screen test apparatus. ($1,100)		Expand basic properties studies to include other building materials as well as insulation, using the screen tester. Continue foamed board moisture absorption/transmission study. Complete low-density concrete tests. Complete wood wetting and drying cycle impacts study. Complete reflective foil testing. Continue moisture impacts studies and initiate study of improved moisture measurement techniques. Complete qualification of first improved standard reference materials. Extend model development to other building materials; continue verification testing. ($1,350)
Building Subsystems	Wall Research: Develop procedure for dynamic testing of walls in the calibrated hot box; complete testing of composite wall sections. Develop techniques to evaluate building envelope thermal anomalies (BETA's); complete study of low-density high-strength concrete to eliminate concrete thermal bridges; complete construction of thermal bridge laboratory facility. Continue study of thermal mass in multi-family buildings; initiate study of thermal mass in southern climates; develop simplified methods for use of thermal mass database in design. Initiate foundations/earth contact research by evaluating problems associated with crawlspace moisture control. Conduct study of innovative foundation systems including all-wood foundations. Evaluate the value of a foundations test facility. ($1,280)		Conduct dynamic tests of walls; develop laboratory test procedures to evaluate dynamic performance of walls; initiate study of moisture ingress mechanisms, frequency, and geographic distributions. Conduct field and laboratory study of thermal anomalies; initiate study of building envelope subsystem joints (wall-floor, wall-wall, etc). Develop guideline for mass utilization in multifamily buildings; continue mass studies in southern climates inluding evaluation of peak load reduction. Continue evaluation of alternative foundation systems. Expand simulation models of wall thermal performance and integrate into existing computer simulations. Evaluate value of superlightweight concrete for foundations. ($880)

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(Dollars in Millions)

KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Building Subsystems (Cont'd)	Roof Research: Continue development of the roof research center. Complete fabrication of the roof research center test chamber. Continue development of model for predicting thermal and moisture transport behavior of roofs. Continue thermal and moisture testing with the roof test apparatus (RTA) in support of model validation. Complete development and initiate validation program for moisture measuring instruments. Complete a study of the effect of solar ultraviolet radiation on roof systems. Complete research on effect of solar absorption on roof thermal performance, expand thermal performance survey methodology to include in-service roofs. Provide a report on the accuracy of thermographic temperature measurements. Validate in situ heat flow measuring devices. ($520)	—	Install roof research center test chamber and conduct acceptance tests. Complete development of roof model which includes moisture and thermal and mechanical stresses. Complete analysis of one-dimensional transient thermal performance of insulated roof systems. Carry out limited three-dimensional thermal analysis of insulated roofs (joints and penetrations). Conduct tests of moisture measuring instruments in the RTA. Design moisture measurement instrument for use in roof research center. ($600)
	Fenestration Research: conduct reduced scope mobile window test (MoWiTT) summer and winter field tests for multiglazed windows and sun control systems. Conduct simulation study of nonresidential daylighting performance. Terminate occupant impact studies: Calibrate luminance mapping camera; conduct reduced level research on advanced design tool planning. ($1,400)	House: Expand scope of summer and winter field testing of multiglazed windows and sun control systems in the MoWiTT unit. Increase planning effort and initiate development of advanced envelope design tool. Continue occupant impact studies. (+$400)	Phase out basic research on transparent insulating glazing materials. Complete preliminary assessment of daylight availability for nonstandard sky conditions. Update and expand daylighting performance database. Continue examination of fenestration impacts on lighting energy savings, cooling loads, peak electric demand and chiller size in nonresidential buildings. Use MoWiTT to complete field tests of multiglazed windows. Conduct initial summer and winter tests of operable and fixed shading. Complete tests of luminous mapping camera in scale models and real environments and continue conceptual development of advance envelope design tool. ($1,400)

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(Dollars in Millions)

KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Building Subsystems (Cont'd)	Lighting: Develop long-range plan to test the hypotheses which quantify the relationship between lighting comfort, lighting design variables and lighting energy use; coordinate with lighting industry research activities. ($200)		No Activity. ($0)
	Infiltration, Ventilation and Indoor Air Quality: Develop and evaluate infiltration, ventilation, and air leakage measurement systems in multifamily buildings. Continue ventilation performance measurements in large buildings, and initiate collaborative interagency efforts to study the generation and distribution of biologicals by mechanical equipment. Continue development of the simplified multizonal infiltration and ventilation model, and initiate study of occupant behavior on infiltration and ventilation performance. Continue assessment of the variability of ambient radon levels in the U.S., characterization of radon building entry mechanisms, and field studies of radon mitigation in buildings. Initiate collaborative interagency efforts to predict, measure, and control radon levels in homes in combination with others performing an epidemiological study of radon exposures and lung cancer. Continue development, testing, and evaluation of energy efficient and cost effective control strategies to maintain indoor air quality. Expand the indoor air quality field study database. Initiate scale model testing of ventilation performance in closed spaces. Continue collaborative efforts to develop voluntary consensus standards for indoor air quality, and interagency efforts to coordinate indoor air quality research. ($1,900)		Continue ventilation performance measurements in large buildings, collaborative interagency efforts to study the generation and distribution of biologicals by mechanical equipment, and development of the simplified multizonal infiltration and ventilation performance simulation model. Complete assessment of the variability of ambient radon levels in the U.S. and characterization of radon building entry mechanisms. Continue field studies of radon mitigation in buildings; collaborative efforts to develop, test, and evaluate energy efficient and cost-effective control strategies to maintain indoor air quality; and interagency efforts to model indoor air quality and energy consumption. ($1,580)

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KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Building Systems Interactions	Commercial: Begin research on systems interactions in retail facilities. In cooperation with users groups, define prototypical buildings for use in analysis. Continue development of energy performance targets with industry. Complete base case building descriptions to be used in technical analysis. Derive for review initial targets for first set of building-load types. Complete planning effort and publish agenda for long-term systems integration of advanced subsystems and designs. Complete design process research plan for long-term design tool development using expert systems technology. Review plan with building industry representatives. ($1,300)		Examine interactive effects of mechanical system types, lighting system designs, and daylighting designs for five climates. Publish energy-conserving systems integration results in a handbook for retail designers and owners. Begin research on systems interactions in medical facilities. In cooperation with user groups, define prototypical buildings for use in analysis. Continue development of energy performance targets with industry. Derive for review initial targets for second set of building-load types. Resolve technical issues resulting from industry review of first set of targets. Implement research agenda for advanced systems and designs. Complete research on first advanced buildings system set. Publish results as design guidelines for innovative commercial building designers and owners. ($1,300)
	Residential: Publish Notice of Inquiry and review public comment on thermal mass addition to finalized slide rule and documents. Test, validate, and update PEAR with thermal mass and apartment data. Collect climate data and prepare climate related rules of thumb for designers. Analyze hot-arid data to ascertain primary determinents of residential buildings energy use, validate finite element model. Initiate analysis of interactions of building design parameters. Continue energy analysis for low rise buildings and develop design and system options. Develop detailed plan for publishing the energy use impacts of construction quality. ($1,000)		Develop microcomputer program using residential data base and PEAR and, combined with graphic package developed by Carnegie-Mellon, prepare package for use by builders and designers. Test and validate ventilation model in several hot-humid locations. Continue energy analysis of building parameter interactions. Conduct tests of the most significant conservation measures in low-rise multifamily buildings to evaluate effectiveness of options. Initiate investigation of predicted vs actual envelope integrity in residential building systems. Examine differences between modular, pre-cut, paneled, and site built construction. ($700)

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KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Building Systems Interaction (Cont'd)	Performance Calculations: Continue DOE-2 maintenance and documentation efforts. Continue development, testing, and validation of new capabilities for DOE-2. Initiate development, testing, and validation of advanced building energy simulation program modules. Initiate collaborative efforts to develop a unified methodology for writing building energy simulation programs. ($800)		Continue DOE-2 maintenance and documentation efforts. Continue development, testing, and validation of new capabilities for DOE-2. ($600)
	Control Systems Research: Continue development of advanced simulation models for evaluating the dynamic interactions among building envelope, space conditioning and other energy-using systems, and building energy control systems. ($130)		No Activity. ($0)
Building Energy Retrofit Research	Single Family Buildings: Validate the monitoring protocol through limited field tests, obtain consensus among private and public organizations on its application and initiate cooperative field monitoring efforts. Using field monitoring and other techniques, initiate research to determine the reasons for variations between predicted and actual energy savings of key retrofit measures and the impacts of building retrofit in hot and humid climates. Complete test and evaluations of equipment retrofit measures and programs. ($800)		Complete the establishment of an effective national field monitoring program based on the standard protocol. Using field monitoring and other techniques, complete analysis of hot and humid climates measures and the causes of variations between predicted and actual levels of energy savings. Initiate analysis of retrofit measures for heating and cooling distribution systems and determine the importance of the secondary impacts of retrofit measures, such as comfort, on consumer decision making and satisfaction. ($900)
	Multifamily Buildings: Validate the monitoring protocol through limited field tests, obtain consensus among private and public organizations on its application and initiate cooperative field monitoring efforts. Complete initial monitoring of public housing projects and review of retrofit measures for hydronic systems.		Complete the establishment of an effective national field monitoring program based on the standard protocol, and establish a national network of researchers and practitioners involved in the retrofit of multifamily housing. Identify improvements to multifamily audit techniques and ini-

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KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Building Energy Retrofit Research (Cont'd)	Using field monitoring and other techniques, assess accuracy of existing audit methods for multifamily housing, determine end-uses (e.g., heating, hot water) with largest potential energy savings, and initiate research to study the impacts of occupant behavior on retrofit energy savings. Develop and apply standard diagnostic procedures for determining air infiltration in multifamily buildings. ($750)		tiate development of improved retrofit measures for the most important energy end uses. Develop and evaluate methods for increasing private sector retrofit of multifamily buildings, particularly at time of transfer or renovation. Identify improved retrofit and operating and maintenance practices for the owners and managers of public housing and other federally assisted housing. ($900)
	Commercial Buildings: Complete data gathering and analysis of building types and end-uses. Develop a standard protocol for collecting and analyzing field data on the impact of retrofit measures in small commercial buildings. Initiate efforts to validate the monitoring protocol through limited field tests. Initiate research on management practices and decisionmaking in the commercial sector to determine the types of retrofit strategies that might be most effective. ($850)		Complete validation of monitoring protocol for small commercial buildings, obtain consensus among private and public organizations on its application, and initiate cooperative field monitoring programs. Initiate development of monitoring protocols for other commercial sector decisionmaking. ($1,000)
Standards and Guidelines	Continue development of interim voluntary energy performance standards for new residential and manufactured housing. Initiate statutorily required demonstration projects of interim commercial buildings standards and interim Federal residential and manufactured housing standards. ($1,200)		Complete development and prepare NOPR for interim voluntary residential and manufactured housing standards and initiate the demonstration project for such standards. Complete commercial building and Federal residential standard demonstration project and prepare reports to Congress. Initiate development of final energy performance standards for new commercial buildings and Federal residential and manufactured housing. ($1,300)
Subprogram Totals	$12,900	+$400	$12,010

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KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
COMMUNITY SYSTEMS			
District Heating and Cooling	Systems and Components Research: Assess the impact of various additives on fluid flow and energy extraction in district cooling systems. Assess the applicability of various proven technologies for renovating the Scranton system; select and study emerging technologies for their potential use in renovating old steam systems (with prior year funds). Develop and test single-loop heat exchangers for extracting heat from mine water in Scranton, PA (with prior year funds). Assess performance of various piping components, systems and concepts for relative cost effectiveness. Continue research in support of industry performance standards development for thermal metering. ($900)		Complete research on additives, identifying suitable additives and their effect on district cooling systems. Select specific technologies to retrofit the Scranton old steam system; prepare final engineering design and financing strategy for technologies which are applicable to old steam systems (with prior year funds). Develop and test multi-loop heat exchangers for mine water applications (with prior year funds). Investigate alternative, cost-effective methods for supplying heating and cooling services simultaneously in DHC systems. Investigate methods to enhance DHC potential and load leveling through use of short term thermal storage techniques. Complete performance assessment of various piping components, systems and concepts for relative cost-effectiveness; conduct research to develop new, more cost-effective piping technologies and configurations. Complete metering research support for industry performance standards development. ($900)
	Feasibility Studies: Select an additional 15 communimunities to assess the feasibility of DHC; continue technical support to participating communities. Test method for analyzing the market potential and penetration level of alternative DHC systems in one community. Initiate inventory of U.S. DHC systems. Continue dissemination of DHC research results and information exchange. ($900)		Select an additional 15 communities for DHC feasibility assessments; continue technical support to participating communities. Apply methods for analyzing the market potential and penetration level of alternative DHC systems in various geographic regions. Complete inventory of U.S. DHC systems. Continue dissemination of DHC research results and IEA information exchange. ($1,300)
Community Energy Planning, Development and Management	Site Design: Continue development of the site design methodology. ($200)		Field test site design methodology under a variety of climatic conditions; refine methodology as necessary. ($200)

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KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Community Energy Planning, Development & Management (Cont'd)	Urban Consortium: No Activity. ($0)	House: Continue support for Urban Consortium Energy Task Force projects that address specific local energy management problems. (+$2,000)	No activity. ($0)
Subprogram Total	$2,000	+$2,000	$2,100
TECHNOLOGY AND CONSUMER PRODUCTS Thermally Activated Heat Pumps	Continue proof-of-concept tests and evaluation of advanced cycle absorption heat pumps for residential and commercial application. Initiate investigation of residential advanced cycle absorption heat pump with ternary fluids and initiate solution pump development for such systems. Complete research on first generation concept and continue concept design and evaluation of second generation low loss hydraulic transmission/compressor, and initiate preliminary evaluation of alternate concepts. Continue supporting research in engine/compressor matching analysis, engine dynamics, and modeling for free piston Stirling engine heat pumps. Continue evaluation of natural gas internal combustion engine heat pump for commercial building applications, including bellows seal concept development and evaluation, and evaluate applicability to residential application. Begin planning for testing of I.C. engine driven heat pump under actual use environment. ($4,200)	House: Accelerate the research and development of an advanced cycle absorption heat pump using ternary fluids, supporting fluids research and diagnostics. Accelerate the investigation of alternate design concepts for an advanced hydraulic compressor for use with free piston Stirling engines. Initiate supporting research on free piston Stirling engines to characterize basic thermodynamic and fluid dynamic processes and develop computer algorithms. (+$1,000)	Continue test and evaluation of advanced cycle absorption heat pumps for residential and commercial application. Continue research and development of residential advanced cycle absorption heat pump using ternary fluids, and solution pumps for such application. Initiate basic research effort leading to the development of novel absorption fluid pairs and ternary mixtures for efficiency augmentation of advanced cycle absorption heat pumps. Develop advanced transmission/compressor concepts for free piston Stirling engine driven heat pumps including hardware development of a second generation hydraulic concept and design evaluation of alternative concepts. Continue supporting research in Stirling engine/compressor thermodynamics, modeling and basic process phenomena. Continue evaluation and testing of an I.C. engine driven heat pump under actual commercial use environment and laboratory conditions. ($5,000)
Advanced Refrigeration Systems	Expand research effort in nonazeotropic refrigerant characterization and evaluation. Expand evaluation of capacity modulation using nonazeotropic refrigerants to include component performance characterization and analytical model development.		Continue research on nonazeotropic refrigerant mixture separation techniques and expand effort on composition control and component test and evaluation. Continue evaluation of novel concepts for alternative refrigeration cycles and techniques to include international cooperative agreement on Stirling

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KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Advanced Refrigeration Systems (Cont'd)	Complete ground coupled heat exchangers testing and model development and transfer technology to private sector. Continue evaluation of novel concepts for alternative refrigeration cycles including direct expansion concepts, and of micro-fine particle materials and evacuated panels. Conduct scoping studies of concepts for advanced commercial building HVAC systems and define a program for establishing part load efficiency characteristics for conversion equipment in commercial buildings. ($2275)		cycle heat pumps. Expand research and evaluation of advanced insulation concepts to include fabrication and testing of evacuated panels. Continue part load efficiency evaluation of commercial building HVAC conversion equipment and planning effort. ($2,330)
Combustion Systems Research	Investigate corrosion mitigation techniques by assessing novel combustion approaches and design methodologies for metallic and nonmetallic condensing heat exchangers. Continue oil-fired equipment assessment and develop technology R&D road map. Develop and evaluate field prototype instruments for assessing performance of gas and wood heating systems and transfer technology to private sector. Complete analysis of combustion reactions and develop a chemical model for wood combustion. ($700)		Continue research on most promising corrosion mitigation technique for condensing heat exchangers. Initiate combustion research to establish criteria for advanced oil burner technology. ($500)
Lighting Equipment Research	Identify lamp characteristics for magnetically loaded (Zeeman effect) mercury isotope enriched lamp. Continue research on electrodeless fluorescent gigahertz lamp system. Develop driving techniques for the electrodeless high intensity discharge (HID) lamp with novel gas fills. Conduct diagnostic experiments to characterize the lamp discharge phenomena. Continue experimental investigation of interactive effects of lighting system components. ($1,220)	House. Initiate cost shared research and development of a photochemical isotope separation process for mercury for enriching fluorescent lamps, including research to reduce losses and the design of material deposition retrieval processes. Initiate exploratory research to determine the feasibility of alternative isotope separation processes for mercury. ($900)	Complete design configuration of the mercury isotope lamp integrated with magnetic loading (Zeeman effect). Investigate techniques for applying magnetic field in magnetically loaded lamp. Conduct research to identify optimum configuration for gigahertz lamp and initiate lamp driving concepts for system operation. Build prototype electrodeless high intensity discharge (HID) lamp and develop lamp driving power sources. Continue lamp diagnostic experiments to characterize lamp discharge phenomena. Initiate development of advanced interactive lighting designs. ($1,250)

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KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Equipment Integration	Begin to quantify identified human response effects of light source stimuli and quantify fatigue effects of lighting on VDT operators. Analyze visual performance models related to lighting and productivity. Continue research on lighting/HVAC interactions. Investigate thermal loss mechanisms in forced-air distribution systems and evaluate the potential for diagnostic techniques. Assess and develop specification for a laboratory research facility for building equipment integration/thermal distribution technologies. ($1,305)		Continue experiments on the impact of lighting on human responses and investigate impacts with metal halide and low pressure sodium lamps. Continue experiments to evaluate the visual performance of VDT operators and continue analysis of visual performance models. Complete experiments and analysis of lighting/HVAC interactions. Continue evaluation of forced-air thermal loss mechanisms. Design and develop laboratory facility for thermal distribution systems research. ($1,190)
Subprogram Total	$9,400	+$1,300	$10,200
APPLIANCE STANDARDS Test Procedures and Consumer Education	Test Procedures Development: Continue to develop, maintain, simplify and improve test procedures for appliances in support of the FTC labeling program. ($800)		Continue to develop, maintain, simplify and improve test procedures for appliances in support of the FTC labeling program. ($800)
	Manufacturer's Requests: Process manufacturer requests for modification of appliance test procedures. ($100)		Process manufacturer requests for modification of appliance test procedures. ($130)
	Consumer Education: Develop materials in conjunction with FTC and utilities to assure maximum use of appliance efficiency and cost-of-operation data. ($100)		Conduct program in conjuntion with FTC to assure maximum use of appliance efficiency and cost-of-operation data on new EnergyGuide label. ($100)
Appliance Standards Development	Perform research on impacts of appliance standards (including energy use analysis); initiate standards rulemaking for three categories of appliances; complete standards rulemaking for four		Continue processing State requests not to be preempted by Federal appliance standards. Complete standards rulemaking for three categories of appliances. Continue research on impacts of appliance standards. ($1,200)

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(Dollars in Millions)

KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Appliance Standards Development (Cont'd)	categories of appliances; and evaluate analysis models. Process State requests not to be preempted by Federal appliance standards. ($1,000)		
Subprogram Total	$2,000		$2,200
ANALYSIS AND TECHNOLOGY TRANSFER Technical Assessment and Analysis	IEA Support: Continue to provide assistence to support IEA implementing agreements, transfer results to U.S. private sector, and arrange private sector participation in IEA activities. ($100)		Continue support for IEA implementing agreements. Continue studies of building conservation technologies used in developed countries and assess impact on international trade and U.S. technology leadership. ($100)
	Analysis: Continue to obtain data on energy use and effectiveness of new technologies; to improve and maintain analytical tools and conduct analysis of current and proposed BCS programs; to monitor research results and disseminate to States, communities, other agencies, utilities, and the private sector; and to work with associations and other organizations to sponsor workshops, conferences, symposiums, and committees to effectively and quickly transfer BCS research results. ($800)		Continue development of Building Energy Accounting System (BEAS), publish data book and annual analysis report. Continue assessment of BCS technologies and conduct analysis of current and proposed BCS programs. Improve and maintain analytical tools. ($1,300)
	Consumer Decision Research: Initiate consumer decision research to determine the circumstances under which consumers will be responsive to energy-saving technologies, technology transfer programs, and information programs such as audits, labels, and consumer guidelines. ($400)	House: Eliminate Consumer Decision Research program. (-$400)	No activity. ($0)
	Utility Applications: Initiate a multiyear research program to determine the impact of building conservation technologies on utility loads, revenues and rates. Complete research plans and begin data collection and analysis. ($400)	House: Conduct a "least cost" planning and research program to assist utilities and regulatory commissions in the evaluation of energy conservation technologies	Complete data collection and analyses initiated in FY 1986. Determine utility impacts of common conservation measures for at least two major climatic or utility service regions. Initiate development of analytical methods for use in other regions. ($500)

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KEY ACTIVITY SUMMARY
(Dollars in Thousands)

KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Technical Assessment & Analysis (Cont'd)		as possible alternatives to supply options in order to meet future energy requirements at the least cost. (-$600)	
Technology Transfer	Rural Housing Amendments (RHA) Act Study: Complete study required by RHA Act of 1983 to compare construction costs, energy use, and value of energy saved in homes built to national manufactured housing safety standards, with homes eligible for loans or insurance under HUD's Title I and Title II programs and FmHA's Title V program. ($700)	House: Limit effort undertaken in FY 1985. (-$350)	No activity. ($0)
	Research Utilization: Continue the Institutes for Architectural and Engineering Faculties and the architectural student design competition. Continue development of design tools, techniques and specific informational packages for architects, engineers, builders, owners, manufacturers, and professional school faculties. ($500)		Continue the Institutes for Architectural and Engineering Faculties and the architectural student design competition. Work with industry to determine better methods of disseminating information to the private sector. Continue development of design tools, techniques and specific informational packages for architects, engineers, builders, owners, manufacturers, and professional school faculties. ($500)
	Energy Efficient Buildings Centers: Design and plan the Energy Efficient Buildings Centers and Clearinghouse. ($100)	House: Eliminate the Energy Efficient Buildings Centers and Clearinghouse. (-$100)	Establish Energy Efficient Buildings Clearinghouse system to distribute highly relevant, current reports to building industry, architects, etc. as requested. ($100)
	Fellowship Program: Establish a fellowship program to support study and research by university faculty members and private sector researchers at national laboratories. ($400)	House: Eliminate the BCS Fellowship program. (-$400)	Maintain fellowship program to support study and research by university faculty members and private sector researchers at national laboratories. ($400)
	Technology Transfer: Activity conducted solely within other BCS technical subprograms. ($0)		Improve technology transfer system to monitor research progress and ensure that research results are transferred quickly, efficiently and effectively to the private sector. Continue to work with other organizations and associations to sponsor workshops.

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KEY ACTIVITY SUMMARY
(Dollars in Millions)

KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Technology Transfer (Cont'd)			symposiums, conferences, and committees to quickly and effectively transfer BCS research results. Prepare and publish state-of-the-art reports on all aspects of efficient use of energy in buildings, building equipment, and community systems. ($500)
Subprogram Totals	$3,400	-$650	$3,100
FEDERAL ENERGY MANAGEMENT PROGRAM			
Federal Planning, Reporting and Evaluation	Continue to provide assistance to agencies in planning and implementing shared-savings programs. Update the Federal 10-Year Buildings Plan to incorporate newly issued energy standards for new buildings. Prepare plans to broaden the data base of the shared-savings information center as Federal agencies put shared-savings contracts in place. Prepare annual reports to the President and to Congress on the status of the Federal agencies progress in meeting the mandated goals of EPCA, NECPA, E.O. 12003, etc. Monitor agencies energy usage and evaluate their progress in meeting mandated goals. Analyze agency energy consumption data and develop trend line data for use by top management. Review energy programs and projects at operational sites. Continue shared-savings information center. Prepare plans for a new workshop program on implementing the new mandatory Federal buildings standards. Develop plans for information exchange and technical interchange with IEA member governments. ($600)	House: Eliminate updating the Federal 10-year Buildings Plan to incorporate the newly issued energy standards for new buildings. (-$75)	Provide guidance to Federal agencies for updating their 10-Year Buildings Plans to incorporate the Congressionally mandated standards developed for new Federal buildings and the ASHRAE 100 series of standards for existing buildings. Review and evaluate agencies' revised buildings and operations plans. Review and update the FEMP energy information system to include process energy. Prepare annual reports to the President and to Congress on the status of the Federal agencies progress in meeting the mandated goals of EPCA, NECPA, E.O. 12003, etc. Monitor agencies energy use and evaluate their progress in meeting mandated goals. Analyze agency energy consumption data and develop trend line data for use by top management. Review energy programs and projects at operational sites. Continue shared-savings information center and monitor and evaluate effectiveness of shared-savings contracts. ($600)

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(Dollars in Millions)

KEY ACTIVITY	ESTIMATED ACTIVITIES DURING FY 1986		PLANNED ACTIVITIES DURING FY 1987
	CONGRESSIONAL REQUEST	CONGRESSIONAL CHANGES	
Program Technical Guidance and Assistance	Update the life cycle cost (LCC) factors, and provide changes to the manual. Provide Federal agencies computer program software for conducting LCC analyses of retrofit projects. Continue assistance to agencies in implementing shared-savings projects and validate data developed on shared-savings projects. Continue workshop on LCC analyses, "Energy in Design" and employee awareness. Pilot test a workshop for implementing the mandatory energy conservation standards for new buildings. Revise and update the Federal Employee Energy Awareness Program Guide. Continue to assist Federal agencies in their Energy Awareness Week activities. Complete and distribute the "Manual for Retrofit of Existing Buildings." ($900)	House: Eliminate validation of data which has been developed for the shared-savings projects. Postpone revising and updating the Federal Employee Awareness Program Guide. (-$150)	Update the life cycle cost (LCC) factors and provide changes to the manual. Continue assistance to Federal agencies in implementing shared-savings projects. Validate data developed on shared-savings projects and develop detailed analyses of effectiveness based on empirical data. Continue workshops for LCC analyses, "Energy in Design," employee awareness, and mandatory building standards, and hold special training sessions for Federal procurement officials and legal advisorson shared savings contracting. Continue to assist Federal agencies in their Energy Awareness Week activities. Initiate information exchange with energy management departments of IEA-member governments. ($900)
Subprogram Total	$1,500	-$225	$1,500
Capital Equipment	Continue to build and equip the Roof Testing Center at ORNL. Acquire diagnostic, computer data logging, and laboratory test equipment to support indoor air quality, advanced lighting, heat pump, district heating and cooling, and FEMP programs. ($2,200)		Continue to equip the Roof Testing Center; upgrade MOWITT; acquire laboratory and field test equipment to support building materials, infiltration, indoor air quality, building energy retrofit, building systems integration, heat pump, and district heating and cooling (DHC) research and the develoment of appliance test procedure. ($2,500)
Subprogram Total	$2,200		$2,500
Program Direction	Staffing at the level of 56 FTE's. Salaries, benefits, travel, and contractor support to manage BCS programs. ($3,539)	House: Reduce travel and contractor support. (-$250)	Staffing at the level of 56 FTE's. Salaries, benefits, and travel for personnel to manage BCS programs. ($3,000)
Subprogram Total	$3,500	-$250	$3,000
PROGRAM TOTAL	$37,300*	-$3,175	$36,610

*Includes $400,000 for Residential Conservation Service

Department of Energy
FY 1987 OMB Budget
Energy-Related Inventions Program

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
Energy Related Inventions Program	ERIP......$5,000 o Continue program as in FY 1985.	$5,000 o No change.	$5,500 o Continue program as in FY 1986. o Continue Innovation Program initiated in FY 1985 by ECUT.

* House Interior Appropriations mark

Department of Energy
FY 1987 OMB Budget
National Appropriate Technology and Assistance Service

KEY ACTIVITIY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
National Appropriate Technology and Assistance Service (NATAS)	NATAS......$1,000 o Continued limited program of tailored technical assistance.	NATAS......$1,000 o No change.	NATAS......$1,000 o Maintain limited program of tailored technical assistance.

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Department [illegible] gy
FY 1987 OM [illegible] t
Energy Conversion and Uti[illegible]ion Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
Combustion and Thermal Sciences	$6,470	$6,470	$6,800
Combustion Technology	$5,000	$5,000	$5,000
	Engine Combustion......$4,000	Engine Combustion......$4,000	Engine Combustion......$4,000
	o Perform NO_x/particulate trade-off studies of operating diesel engine for engine design optimization of emission characteristics. o Make flame structure measurements within the burning spray of Diesel and DISC engines. Research will address the mechanism of fuel spray development within the engine and how fuel injector design parameters affect fuel distribution patterns droplet sizes, and injection rate. Effort will lead to optimization of fuel-air ratio and distribution at the point of injection. o Use laser velocimetry to analyze in-cylinder processes that govern engine performance such as mixing and combustion which are to a great extend controlled by turbulence and bulk fluid bulk motion (swirl, squish). Specific swirl ports and cup-in-piston geometries will b studied. Important to the development of DISC engines.	o No change.	o Perform additional NO_x/ particulate trade-off studies for Diesel engines. o Continue study of turbulence interactions and flame propagation in engines. o Conduct study of chemical processes and fluid mechanics associated with the mechanisms of engine knock. o Continue study of combustion characteristics of fuel sprays as they relate to performance and emission formation for Diesel and DISC engines. o Carry on heat transfer research to understand in-cylinder convection and conduction processes and to develop multidimensional computer model. Research will also include aspects of heat transfer pertinent to engine knock.

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Energy Conversion . .ilization Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
	o Conduct in-cylinder research on convection and conduction heat transfer processes and couple with radiation effort to develop integrated experiments and analytical model incorporating all three heat transfer modes to predict impact on performance and reliability of such engines as the adiabatic Diesel as well as the open-chamber Diesel concept. o Continue research on role of fuel droplets on combustion as fuel properties and injection parameters are varied. Selected fuel samples will be used to represent variations in fuel properties and their impact on fuel spray development. o Research will enhance the ability of DISC and diesel engine concepts to use low-grade fuels. Significant savings are realized at the refinery as well as via use of fuel efficient engine.		
	Continuous Combustion......$1,000 o Investigate the effects of fluid mechanics on spray combustion. Extend non-dilute spray model to include multicomponent fuels. The processes of injection, vaporization, mixing and combustion affect system performance as well as emission of pollutants such as soot and oxides of nitrogen. This research focuses on improving the understanding of atomization and the temperture, pressure, oxygen mass fraction and flow velocities experienced by the fuel for liquid-fueled systems. Current understanding of these controlling processes is inadequate for combustor designers to meet future needs.	Continuous Combustion......$1,000 o No change.	Continuous Combustion......$1,000 o Continue to investigate the effect of fluid mechanics on spray combustion. Develop multicomponent fuel spray model for use by combustor designers. o Investigate the basic principles of pulse combustion for gas, liquid and solid fuel systems. Research focuses on combustion and heat transfer processes and their coupling. o Develop technology data base for microemulsion fuels. Continue model developments coupled with experiments using Small Angle Neutron Scattering techniques. Research is focused on phase stability and scattering studies on pure hydrocarbon system containing amine bases.

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FY 1987 0 get
Energy Conversion and U .tion Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
	o Determine the effects of such operating paratmeters as fuel-air ratio, mass and pressure on performance and emission characteristics for pulse combustion. o Initiate work on liquid and solid fueled systems. o Continue the development of microemulsion fuels technology data base. Experimentally validate computer model for microemulsion fuel systems. Research will produce a technology data base suitable for use by developers of fuels and fuel additives, to tailor alternative fuels to meet requirements of given applications.		

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Departmen Energy
FY 1987 udget
Energy Conversion and Utilization Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
Thermal Sciences	$1,470	$1,470	$1,800
	Advanced Heat Transfer......$525 o Complete initial research to study regenerator anomalies between theory and actual performance data. o Develop user friendly computer code for design of heat exchangers without fluid elastic instabilities. o Continue research on direct contact heat exchanger concepts and issue RFP. Effort includes research of a direct contact concept, the Ranque-Hilsch effect, to develop a high temperature core; coupled with fine particle counterflow to enchance heat transfer.	Advanced Heat Transfer......$525 o No change.	Heat and Mass Transfer.....$800 o Incorporate results of regenerator studies into analysis models under development for energy conversion systems. o Expand user friendly computer code for design of changers to include two-phase flow and pressure drop optimization. o Continue direct contact heat transfer research to examine heat and mass transfer processes and their relevance to flooding limits which establish the upper limit for efficient and safe operation.
	Advanced Conversion Technology......$945 o Continue fluid dynamics, thermodynamics, and heat transfer research using Reversing Flow Test Facility (RFTF). o Continue development of isothermal compressor concept for power cycles. o Initiate direct conversion technology research to advance current state-of-art.	Advanced Conversion Technology......$945 o No change.	Energy Conversion Technology....$1,000 o Continue studies using RFTF. Incorporate experimental results into Stirling Engine Analysis Module and Optimization routine. o Complete research on isothermal compressor concepts for power cycles. o Expand technology base activity in support of the development of heat pumps and heat engines using Stirling cycle. o Conduct research on direct energy conversion technology initiated in FY 1986. Effort will advance current state-of-art and develop options for utility and industrial applications.

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Department of Energy
FY 1987 OMB Budget
Energy Conversion and Utilization Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
Materials	$6,000	$6,000	$6,700
	High-Temperature Materials......$3,250	High-Temperature Materials.....$3,250	High-Temperature Materials....$3,650.
	o Continued experimental investigation of mechanism of increased temperature stability in nickel aluminide. Initiate research on problems of weldability and hot formability. o Make ductile other members of intermetallic family having high-temperature stability potential (e.g., iron aluminides). o Use radio frequency radiation to join ceramic materials, both with and without brazing materials. o Initiate experimental verification of ceramic joining finite element interfacial stress models.	o No change.	o Investigate mechanisms of increased temperature stability in nickel aluminide. Continue research on problems of weldability and hot formability. o Continue research to make ductile other members of intermetallic bility potential (e.g., iron aluminides). o Conduct experiments using radio frequency radiation to join ceramic finite element interfacial stress model. o Continue experimental verification of ceramic joining finite element interfacial stress models. o Initiate research on surface modification of ceramic materials as means to toughen their surfaces.
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Department of Energy
FY 1987 Budget
Energy Conversion and zation Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
	Materials by Design......$1,500	Materials by Design......$1,500	Materials by Design......$1,950
	o Continue research to correlate the bonding and structure of selected model systems using both experimental and theoretical computational tools to design desired properties into materials by a knowledge of their structure and bonding.	o No change.	o Continue research to correlate the bonding and structure of selected model systems using both experimental and theoretical computational tools to design desired properties into materials by a knowledge of their structure and bonding.
	o Initiate study of bonding in metal clusters as a model for nickel aluminide so as to be able to predict what micro-alloying technique to use to make any given intermetallic compound ductile.		o Continue study of bonding in metal clusters as a model for nickel aluminide so as to be able to predict what micro-alloying technique to use to make any given intermetallic compound ductile.
			o Initiate design of new liquid crystal polymer of desired strength and rigidity by knowledge of molecular structure and cross linked bond strength.

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Energy Conversion and Utilization Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
	Lightweight Materials......$600 o Continue experiments selected from competitive solicitation to deploymerize automotive plastic scrap. o Initiate research on use of heat of polymerization reactions (reactive polymer processing) to save energy in the molding process.	Lightweight Materials......$600 o No change.	Lightweight Materials.....$400 o Continue experiments selected from competitive solicitation to deploymerize automotive pastic scrap. o Eliminate reactive polymer processing.
*House Interior Appropriations mark	Corrosion Resistant Materials.....$650 o Continue experiments to develop new and corrosion resistant magnesium alloys. o Continue research on ion implantation/laser annealed modified surfaces for corrosion protection of iron and magnesium based alloys. o Initiate research on corrosion of ceramic materials in severe environments.	Corrosion Resistant Materials......$650 o No change.	Corrosion Resistant Materials.....$700 o Develop new and corrosion resistant magnesium alloys. o Continue research on ion implantation/laser and modified surfaces for corrosion protection of iron and magnesium based alloys. o Conduct research on corrosion of ceramic materials in severe environments.

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Energy Conversion and Utilization Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
Catalysis/ Biocatalysis	$3,285	$2,785	$3,558
	Bioprocess Engineering......$2,285	Bioprocess Engineering.....$2,285	Bioprocess Engineering......$2,558
	• Continue research on stabilization of genetic information in recombinant microorganisms. • Carry on research on novel bioreactor concepts which may make it feasable to economically produce chemicals such as butanol biocatalytically. o Initiate planning for direct use of enzymes in biochemical reaction processes to eliminate energy used to maintain the metabolic processes of living organisms.	o No change.	• Conclude research on stabilization of genetic information in recombinant microorganisms. • Complete research contracts from competitive solicitation on novel bioreactor concepts which may make it feasible to economically produce bulk chemicals such as butanol biocatalytically. • Initiate research on direct use of enzymes in biochemical reaction processes to eliminate energy used to maintain the metabolic processes of living microorganisms.
	Catalysis-by-Design......$500	Catalysis-by-Design......$500	Catalysis-by-design......$500
	• Initiate research on catalysis by design through experimental characterization and theoretical modeling of biocatalytic systems.	o No change.	o Maintain research effort on catalysis-by-design through experimental characterization and theoretical modeling of biocatalytic systems.
	Biologically Effected Separation/ Beneficiation......$500	Biologically Effected Separation/ Beneficiation......(-$500)	Biologically Effected Separation/ Benefication......$500
	o Initiate research to use biological systems to separate or concentrate chemicals or metals from dilute solutions.	o Terminate Bioseparations research.	o Maintain research effort to use biological systems to separate or concentrate chemicals or metals from dilute solution.

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KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
International Research Monitoring	International Research Mon. oring ......$150 o Initiate compilation of data base on status of energy conservation related research in selected foreign countries (Japan, Germany, Sweden).	International Research Monitoring ......$150 o No change.	International Research Monitoring ......$150 o Continue data base compilation on energy conservation related research in foreign countries. FY 1986 efforts included Japan, West Germany, and Sweden. FY 1987 will add U.K. and France.
Conservation Program Analysis and Planning (CPAP)	CPAP......$0 o No activity.	CPAP......$0 o No activity.	CPAP......$500 o Update Conservation Five-Year Plan. o Provide coordination and oversight of total DOE Energy Conservation effort. o Conduct supercomputer needs assessments for ECUT and all Conservation and Renewable Energy Programs.
Capital Equipment	Capital Equipment......$1,000 o Acquire new laboratory equipment, e.g., multifuel combustor systems; materials processing/evaluating/testing equipment; fermentation/control instrumentation; surface modification and friction apparatus.	Capital Equipment......$1,000 o No change.	Capital Equipment......$1,000 o Maintain efforts to upgrade outmoded equipment at government laboratories. o Begin furnishing research instrumentation to Historically Black Colleges and Universities to enable them to fully participate in ECUT Program research.
Program Direction	Program Direction......$535 o Provide 9 FTE's and associated costs for ECUT.	Program Direction......$510 o No change	Program Direction......$510 o Provide 9 FTE's and associated costs for ECUT.

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Energy Conversion and Uti...ation Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
Tribology	$3,285	$4,285	$3,558
	Lubricants......$1,000	Lubricants......(+$250)	Lubricants......$1,000
	o Validate model that correlates molecular structure with lubricant qualities, and synthesize model compounds in order to determine the exact parameters that control friction and wear. o Continue research on in-situ deposition from the gas phase as lubricating mechanism for elevated (200°-600°C) engines. o Initiate joint research project with the U.S. Air Force on high-temperature (above 600°C) liquid, (not solid) lubricants.	Same as President's Request plus: o Initiate effort in developing in-situ chemical-mechanical diagnostic techniques for lubricants over a wide range of temperatures.	o Develop analytical techniques and instrumentation that advance the state-of-the-art in understanding how lubricants work at low, elevated, and high temperatures. o Continue effort in developing in-situ chemical-mechanical diagnostic techniques for lubricants over a wide range of temperatures. o Continue development of model compounds applicable to elevated temperatures. o Conduct research on novel lubrication mechanisms, such as in-situ deposition of lubricants from the gas phase. o Carry on high-temperature liquid lubricant research. o Initiate major new research thrust to investigate how high-temperature (above 600°C) lubricants operate in extreme environments typical of the adiabatic diesel; coordinate work with DARPA, Transportation Systems; and NASA
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FY 1987 Off et
Energy Conversion and Ut ion Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
	Mechanisms of Friction and Wear......$800	Mechanisms of Friction and Wear......$800	Mechanisms of Friction and Wear......$800
	o Conduct in-depth characterization of wear traces in order to understand friction and wear of monolithic ceramic composites and ceramic coatings for use at temperatures above 600°C; share research results with DARPA, Transportation Systems, and National Synchrotron Light Source at Brookhaven National Labratory. o Complete first phase of X-ray subsurface wear studies at NSLS. o Initiate research on unlubricated sliding of monolithic ceramics and ceramic composites at temperatures above 600°C. o Develop methodology for a standardized friction and wear test. o Complete assessment of ceramic wear test devices and procedures.	o No change.	o Complete analyses of measurements of hot spot temperatures on unlubricated sliding of ceramics applicable to heat engines in order to develop theromechanical model of the sliding interface. o Develop model to describe the friction and wear of lubricated ceram- Develop model to describe the friction and wear of lubricated ceramics at temperatures up to 600°C. o Complete study of ceramic composites at temperatures up to 600°C, and develop model to explain friction and wear properties.
	Friction and Wear Testing......$500	Friction and Wear Testing......$500	Friction and Wear Testing......$500
	o Develop methodology for a standardized friction and wear test. o Complete assessment of ceramic wear test devices and procedures.	o No change.	o Gain consensus from American Society for Testing and Material for a standardized friction and wear test. o Develop methodology for additional friction and wear tests that advance the state-of-the-art for ceramics and ceramic coatings.

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FY 1987 OMB Budget
Energy Conversion and Utilization Technologies

KEY ACTIVITY SUMMARY

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	President's Request	Congressional Changes*	
	Tribological Coatings......$835 o Expand FY 1985 efforts, and initiate experiments to develop advanced tribological coatings where such wear-resistant surfaces are a requirement, such as in the agricultural, metalworking, and transportation sectors.	Tribological Coatings......(+$750) o Initiate major new research thrusts to develop in-situ monitoring techniques that would advance the state-of-the-art of modifying the surfaces of components. o Develop conceptual design for a national user facility for tribological surface modification research at Argonne National Laboratory.	Tribological Coatings......$1,000 o Complete modeling work that explains how tool steels chemically dissolve in the workpiece; this effort will provide the theoretical framework for surface modification research applicable to the metalworking and automotive sectors. o Expand experiments to develop well-characterized tribological surface modification techniques that are vastly superior to present-day techniques.
	Data Retrieval System......$150 o Develop long-range feasibility, cost, and implementation plan for a state-of-the-art computerized numeric and bibliographic tribology information system. o Initiate support from industry and technical societies to cost share this project.	Data Retrieval System......(+$100) Same as President's Request plus: o Complete planning phase for tribology information system, and begin implementation of project plan approved by industrial co-sponsors.	Data Retrieval System......$250 o Continue implementation of project plan for prototype system.
Total Multi-Sector	$26,725		$29,276
Less Mgmt. Initiatives	- 700		- 307
	$26,025		$28,969

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Department of Energy
FY 1987 OMB BUDGET SUBMISSION
($ in 000's)
State and Local Assistance Program
Key Activity Summary

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Weatherization Assistance Program	Maximize impact of reduced federal funding, in anticipation of 5-year phaseout federal funds. Develop series of "lessons learned" to transfer successful program operation strategies to program grantees. Issues 50 program opportunity grants to State and local agencies to demonstrate strategies for carrying out weatherization activities without federal funds. Develop multi-year strategy to promote non-federal involvement in low-income weatherization. Weatherize 148,000 dwelling units. ($152,890)	House - (+$47,110) Weatherize 45,000 bonus. Increase support for innovative financing initiative designed to increase program impact in multifamily building sector. Continue activities to improve quality control and promote client education. Expand non-federal involvement through economic development activities and "How To" publications for local agencies.	Limited assistance to states in identifying alternate sources of funding. Reduced support for innovative financing strategies. No funds for program opportunity grants. Weatherize 100,000 homes. ($110,971)

Department of Energy
FY 1987 OMB BUDGET SUBMISSION
($ in 000's)
State and Local Assistance Program
Key Activity Summary

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Schools and Hospitals	Implement strategy developed in FY 1985. Use a portion of appropriation for developmental grants to states to assist non-profit institutions to gain access to alternative financing sources for energy conservation projects. Prepare case studies based on these activities to assist States in preparing for phase down of federal grants. Provide approximately 980 grants covering 2400 buildings. ($37,634)	House- (+ 9,500) Provide funding for approximately 245 additional grants, covering projects in 600 institutional buildings. Increase scope of implementation of the multi-year strategy. Increase information transfer activities.	Small scale continued implementation of multi-year strategy. Limited work with states to assist institutions in identifying alternate sources of funding. Provide 735 grants covering 1800 buildings. ($28,226)

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FY 1987 OMB BUDGET SUBMISSION
($ in 000's)
State and Local Assistance Program
Key Activity Summary

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
EPCA Grants	Provide grants to states to continue their best energy efficiency programs. Implement multi-year strategy to effect smooth transition to funding fron non-federal sources work with states to increase program planning, evaluation and financing skills. Key to this is proposed legislation, currently under agency review, to combine SECP/EES, allowing greater flexibility to states and emphasizing DOE's roll in providing technical assistance. ($18,818)	House- (no change from Congressional Request)	Provide for orderly closeout of federal funding for program activities. Limited work with states to assist in identifying alternate sources of funding. ($12,113)

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FY 1987 OMB BUDGET SUBMISSION
($ in 000's)
State and Local Assistance Program
Key Activity Summary

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Energy Extension Service	Provide grants to states to continue their best energy efficiency outreach programs. Implement multi-year strategy to effect smooth transition to funding from non-federal sources. Work with states to increase program planning, evaluation and financing and skills. Key to this is proposed legislation, currently under agency review, to combine EES/SECP, allowing greater flexibility to states and emphasizing DOE's role in providing technical assistance. ($7,841)	House- (no change to Congressional Request)	Provide for orderly closeout of federal funding for program activities. Limited work with states to assist in identifying alternate sources of funding. ($5,881)

Department of Energy
FY 1987 OMB BUDGET SUBMISSION
($ in 000's)
State and Local Assistance Program
Key Activity Summary

Key Activity	Estimated Activities During FY 1986		Planned Activites During FY 1987
	Congressional Request	Congressional Changes	
Buildings Efficiency Applications	-	-	This new program initiatives, replacing RCS/CACS, provides support for voluntary energy efficiency programs in the non-federal sector aimed at the multifamily and small to medium commercial buildings. Five types of activities will be carried out: (1) technical services, (2) demonstration projects and innovative programs, (3) program assessment, (4) experimental field programs, and (5) program information support. ($2,000)

Department of Energy
FY 1987 OMB BUDGET SUBMISSION
($ in 000's)
State and Local Assistance Program
Key Activity Summary

Key Activity	Estimated Activities During FY 1986		Planned Activities During FY 1987
	Congressional Request	Congressional Changes	
Program Direction	Support 180 FTE at Headquarters and in the field offices. Provide support for monitoring and evaluation of programs and appropriate cross-program technical assistance activities. ($8,774)	House (-250) Reduce funds available for monitoring activities.	Support 149 FTE at Headquarters and in the field offices. Provide support for monitoring and evaluation of programs and appropriate cross-program technical assistance activities. ($9,336)

Mr. **Yates**. Well, if you don't have savings coming out of these programs, it seems kind of lacking in common sense to reduce them, doesn't it, where you have savings coming along. We are going to need energy savings in the future?

Miss **Fitzpatrick**. Mr. Chairman, I think that these programs are a very valuable investment. You have my original budget request, which indicates that we obviously thought there were more worthwhile things we could do. As I said, what has driven the final budget request level has been the fiscal constraints. I think that that has become an overriding issue.

PROGRAM PRIORITIES

Mr. **Yates**. Let me ask you the question: Suppose the committee, in its wisdom, decided that the cuts are too drastic and that the research program should be continued. Which programs would you like to see funded that you have cut out or that you have reduced?

Miss **Fitzpatrick**. I would return to our original budget request. We have a full set of priorities all the way up to that level. I would concentrate first on Transportation Programs because I think that they are directed at our greatest energy vulnerability, which is in oil. Because we use most of our oil in transportation, we need to have greater fuel diversity, both for liquid fuel oils, gas turbine engines, or electric vehicles.

I would do more work on advanced heating and cooling systems in buildings because those are the greatest building uses, and those are the systems which can be replaced in existing buildings; therefore, they offer really the greatest opportunity to actually use and get some savings out of anything that we accomplish.

Third, I would work on industrial process efficiency because the country needs it, first, to reduce its energy needs and second to remain competitive in the world market.

AUTOMOBILE FUEL EFFICIENCY

Mr. **Yates**. What is your feeling about the bill that is being tossed about in Congress to do away with the automobile standards that limit the size and power of engines?

Miss **Fitzpatrick**. I am not familiar with that specific bill.

Mr. **Yates**. The question is whether it will eliminate the requirement on the part of manufacturers to continue to increase the mileage——

Miss **Fitzpatrick**. Yes. The CAFE Standards.

Mr. **Yates**. That is right. We still need that, don't we?

Miss **Fitzpatrick**. I have seen, to be honest, Mr. Chairman, arguments on both sides of how effective the standards themselves have been. I think that the transportation industry needs to increase its efficiency. I think that it tends to be very responsive to short-term price signals. Right now you are getting a price signal, and we have for several years, where the price of gasoline has been steady or even dropping in real terms. It is dropping very fast now.

People tend to say I would like to have a bigger car, I would like to have a car which trades off some benefits for fuel efficiency. In the same way, though, that industry turns around very fast, as it did in the 1970s, to market demands. I think that our real goal, the long-term goal, the Federal Government should have, in the transportation sector, is to work with the industry. We find that the industry is very receptive to this and anxious to do it, in making substantial increases in efficiency without sacrificing power and the size of the car, and to work on fuel diversity so that we can have an engine such as the gas turbine engine, which will run very easily, not just on gasoline and diesel, but methanol and other fuels.

Mr. YATES. Do you foresee the need for energy conservation in transportation, including automobiles owned by private ownership in the future?

Miss FITZPATRICK. Yes, I do. I think that fuel efficiency is still a major factor, should be a major factor in anybody's choices, and fuel flexibility.

Mr. YATES. That is why you are continuing the research programs you are, aren't you?

Miss FITZPATRICK. Yes.

GAS TURBINE ENGINES

Mr. YATES. What progress is being made in those?

Miss FITZPATRICK. The gas turbine engines, I think, have been very successful. The models we have built, prototypes, will be running this fiscal year at full temperatures and speed. That is in the range of 2,300 degrees temperature and 80,000 to 100,000 RPM. The materials required to run engines at those temperatures and speeds are new. This has been at the cutting edge of technology development because those temperatures and pressures, the mechanical stresses involved, are something no engine we have in use today has to endure. Those research and development programs have been very successful. Those engines run, and they work.

Our problem is how do you take an engine like that, which is made of materials, and of a design that had to be invented, how do you mass produce it, how do you get the reliability and the components in particular so they don't shatter when they are put into an engine? It is one thing to make a component by hand, it is something else to make millions of them a year, on a production schedule, and that is where we are concentrating our effort. We know how to build that engine; we have it designed; we know it works. It has exceeded its design targets for efficiency. We know it can be easily adapted to a variety of fuels and so we think we have an engine that works. Now we have to figure out how to make it reliable on a mass scale.

Mr. YATES. How efficient is that engine? How much mileage will you get on it?

Miss FITZPATRICK. We project for a mid-sized auto that you would have, the target was a 30 percent increase in efficiency. We used mathematical models to project this. Mathematical models now indicate the increase in efficiency to be closer to 60 percent than previously estimated.

Mr. YATES. Translate that.

Miss FITZPATRICK. You would go from a 25-miles-per-gallon vehicle to a 42-miles-per-gallon vehicle.

Mr. YATES. They have an engine that does that?

Miss **Fitzpatrick**. The models and tests so far indicate that that is what it will do.

Mr. **Yates**. That is with the turbo?

Miss **Fitzpatrick**. That is with the turbo-charged gas engine.

CERAMIC ENGINE

Mr. **Yates**. If my memory is right, you were attempting, or your predecessors were attempting to adopt ceramics for that purpose because of the high heat question that was involved?

Miss **Fitzpatrick**. That is correct.

Mr. **Yates**. Have you been able to successfully adapt ceramic?

Miss **Fitzpatrick**. Yes, the engine we have today, the entire engine is ceramic.

Mr. **Yates**. How many hours has it run?

Miss **Fitzpatrick**. It has not yet been run at full speeds and temperatures. It has been run at over 2,000 degrees at full speed. The target for this year is to run it at full temperature of 2,400 degrees. There are two models, the AGT-101 and AGT-100. One is the Garrett/Ford team and the other is the GM/Allison team.

Mr. **Yates**. Is one better than the other?

Miss **Fitzpatrick**. No, we can't really say that at this point.

Mr. **Yates**. How long have they been running?

Miss **Fitzpatrick**. They have been running, building up slowly to full temperature and speeds.

Mr. **Yates**. Are there components that can be used in mass production rather than the whole engine?

Miss **Fitzpatrick**. There have been some spinoffs already in the use of those ceramic materials.

Mr. **Yates**. Who makes the ceramic materials?

Miss **Fitzpatrick**. Garrett makes some of them, GTE makes some, some of them are being made by Japanese companies. The Japanese have a turbine rotor that seems to be pretty good. They don't have an engine like ours to test it in.

Mr. **Yates**. They were ahead a couple years ago, weren't they?

Miss **Fitzpatrick**. They had plans and pretty much announced they were going to have a ceramic engine, but it hasn't appeared, and they may have gotten a little ahead of themselves.

Mr. **Yates**. Are we ahead of ourselves?

Miss **Fitzpatrick**. I don't think so. We are trying to have a very deliberate, satisfactory research program that will help us solve the problems along the way and not jump ahead so we suddenly find we have to go back and redo a great deal of work.

Mr. **Yates**. Are they different in technique and style?

Miss **Fitzpatrick**. One has a single shaft where the turbo charger rotor and drive shaft are all one, which has simplicity. The other is a double shaft engine. The double shaft engine runs at slightly lower speed, and at 80,000 RPM instead of 100,000 RPM.

As far as its performance and overall technical quality, they are both good. You would be hard pressed to choose between them.

Mr. **Yates**. That is pretty good news. That is better than we have had over the years, isn't it?

What happened to the third engine? Wasn't there a third engine being researched? Chrysler had one, didn't they? That was several years ago.

Mr. **Streb.** In the early stages of the program, I believe there was a third engine, but we haven't been pursuing that for the last four or five years. Chrysler, on their own, many years ago, Mr. Chairman, pursued a program to develop the gas turbine and applied quite a few to autos. This was in the early 1960's, as I recall.

Mr. **Yates.** I had the impression Chrysler is way ahead in the turbine field. The reason for that is I have driven some of the small cars Chrysler has put out that have turbines.

Miss **Fitzpatrick.** It is a preturbo charger, precharging turbine.

Mr. **Yates.** It is pretty good. Did the other companies use that?

Miss **Fitzpatrick.** Oh, yes. Other companies put out turbocharged engines. The difference with this engine is that the entire engine is a turbine, there are no pistons in these engines. The drive force is hot gases hitting the turbine blade, spinning the turbine. That makes for a smooth operation. You don't have all the efficiency losses you have in a reciprocating engine where you get a piston to stop and go in the other direction. You have less vibration losses, so it should be a very efficient engine.

COMPONENT RELIABILITY

Mr. **Yates.** Well, are there still breakthroughs? There may be breakups rather than breakthroughs, right?

Miss **Fitzpatrick.** I was at a test a couple months ago at the Garrett plant, and things broke. That is our problem. These ceramics——

Mr. **Yates.** So you don't have an engine——

Miss **Fitzpatrick.** Yes, we have an engine, and it works. What I was saying before is that it is hard to make the components with a high degree of reliability. We do not have high reliability in component manufacture.

Mr. **Yates.** How do you have an engine if the components don't work?

Miss **Fitzpatrick.** That is why we are continuing with the program. We have an engine, we know it works, we know the design is good, but if we are going to mass produce that engine, we must be able to make the components so we know they won't break, and that is where the new materials come in.

Mr. **Yates.** This is tribology.

Miss **Fitzpatrick.** Tribology enters into it, although that is a separate program. Tribology is friction and wear, and ceramics are also included in that. There is the possibility of having ceramic material that requires no lubrication, which is a great problem. At these high temperatures, the lubricants we are used to working with are useless. So we have a problem there.

Mr. **Yates.** What is the possibility that companies with whom you have been working will fill the gap, the research gap that will take place because of cutbacks in your programs? Any?

Miss **Fitzpatrick.** I think there is a possibility. When we have talked to them, they are determined this is the kind of engine and these are the kinds of materials that they must develop if they are going to have a future. Of course, there are always the same kind of pressures and balancing acts that go on within those companies that the Federal Government itself faces. We find the program people at least are very enthusiastic.

BUILDING RESEARCH

Mr. YATES. Now that is your answer with respect to transportation. What about the other fields, buildings and community systems, industrial?

Miss FITZPATRICK. Yes. In buildings, we are concentrating on——

Mr. YATES. Is private industry going to take up slack there in the programs you are cutting back on?

Miss FITZPATRICK. I think they can take up some of the slack.

Mr. YATES. I think they can too, but is there any indication they are going to? No?

Miss FITZPATRICK. No. I will say that honestly. I also don't know that that is conclusive because we are in a constant negotiation with them. They will never offer more than they think they can get away with, as we won't. There is always a certain amount of tension between us.

Mr. YATES. EPRI is cutting back in its research, isn't it?

Miss FITZPATRICK. Yes. Unfortunately EPRI has recently had a cutback in its research budget.

Mr. YATES. If they cut back and you cut back, how do we make progress?

Miss FITZPATRICK. I think we have a problem, Mr. Chairman.

Mr. YATES. Okay. Well, if they cut back—you have to cut there, too. If they are cutting back—if they cut back—well, is there no need for progress? You have budget constraints and apparently they have budget constraints, so nobody is going to move forward with some of these programs. Are there any programs that should move forward that EPRI is cutting back on and that you are cutting back on?

Miss FITZPATRICK. I think if we had our druthers, they would move forward, all of them across-the-board would have things we could do. That would be in the best of all possible worlds.

Mr. YATES. You gave us a list for transportation. Do you have comparable ones for the others?

Miss FITZPATRICK. Yes.

Mr. YATES. Do you have prime candidates? Can you give the committee a selection of programs you think are of higher importance than others?

Miss FITZPATRICK. Yes, we can do that, Mr. Chairman.

[The information follows:]

INTEGRATED CONSERVATION R&D PROGRAM PRIORITIES

The following is a priority list of Conservation Research and Development activities which were in the OMB budget request to Congress. This integrated list generally does not include specific funding increments associated with capital equipment, in-house program technology assessment and transfer, statutory programs nor program direction.

The priority list provides a summary listing. The Key Activities Charts, provided to the committee previously, contains detailed description of these activities.

Activities Not Included in Budget Request

Priority	Program Office	Project Title and Description	Amount ($000)
1	TS	Advanced Materials Development o Enhanced Ceramic Program	$6,500
2	IP	Waste Energy Reduction o Nat.'l Lab Support o Improved Combustion Efficiency o Advanced Coal Burner Development o Heat Pump Technology o High Temperature Recuperators o Gaseous Wastes	$5,256
3	TS	EHV Batteries o Nickel-iron o Sodium-sulfur o Zinc-bromine	$1,725
4	IP	Industrial Process Efficiencies o Separations o Low Temperature Sensor Development o Electrolysis Process o Coatings	$3,200

5	BCS	Technology and Consumer Products o Advanced refrigeration systems research o Combustion systems research o Additional research on thermally activated heat pumps o Lighting equipment research	$4,050
6	MS	Energy Conversion and Utilization o Materials (corrosion-resistant, materials-by-design-, and lightweight) o Combustion (continuous) o Tribology (lubricants, coatings, mechanisms of friction and wear, friction and wear testing, o Catalysis/Biocatalysis (bio-process engineering, catalysis-by-design, biologically effected separations/beneficiation) o Thermal Sciences (advanced conversion technology, advanced heat transfer)	$5,616
7	TS	Vehicle Propulsion R&D o Vehicle Propulsion R&D Gas Turbine Components Adiabatic Diesel	$3,500
8	IP	Industrial Cogeneration o Steam Diesel o Direct Thermal to Electric Conversion	$ 500
9	TS	Alternative Fuels o Synthetic fuels o Methanol o Methane	$1,640

10	BCS	Building Systems o Research on new materials o Research on fenestration and daylighting o Commercial buildings integration and performance simulation o Retrofit of multifamily and single family residences	$5,850
11	IP	Waste Energy Reduction o Industrial Wastewaters o Wood Fibrous Waste o Mixed & Inorganic Waste	$1,100
12	BCS	Community Systems o Research on innovative district heating technologies	$ 900
13	TS	EHV Propulsion Systems o Dual-shaft o ETX-II	$3,360
14	IP	Industrial Cogeneration o Externally Fired Brayton System o Bottom Cycle Development	$3,000
15	TS	EHV Test and Evaluation o INEL Lab & Dyno Testing o Site Operations	$2,675
16	IP	Industrial Process Efficiency o Industrial Process Efficiency Thin Strip Casting.	$7,321
17	BCS	Technology and Consumer Products o Equipment integration research.	$1,150

18	BCS	Building Systems o Research on moisture effects on existing buildings. o Additional research on walls and roofs. o Residential buildings integration research. o Retrofit of commercial buildings.	$1,980
19	BCS	Community Systems o Feasibility grants to communities for district heating. o Community energy system integration.	$1,200

TS - Transportation Systems
MS - Multi-Sector
IP - Industrial Programs
BSC - Buildings and Community Systems

INDUSTRY COST-SHARING

Mr. YATES. I wish you would. I guess you can rate them from one to 10, can't you? What about the impact of decreasing oil prices, do they make your R&D investment in these technologies less attractive to industry?

Miss FITZPATRICK. In the very short-term, I think it does, Mr. Chairman, but it does not change our view in the long term, which is where we try to work.

Mr. YATES. Is there a possibility of your entering into cost-sharing arrangements with industry so your cutbacks can be compensated for in some measure?

Miss FITZPATRICK. Yes, cost-sharing has been a basic part of our research program, and we are always looking for ways to increase that and use different mechanisms to try to make it more attractive to industry.

STAFFING LEVELS

Mr. YATES. All right, the committee, from time to time, has legislated staffing floors. Last year you had 325 people, now you have 317. Does this mean you are not going to hire any more people?

Miss FITZPATRICK. No, Mr. Chairman, it means that we are having difficulty hiring the people that we need.

Mr. YATES. Have you tried?

Miss FITZPATRICK. Yes, sir, we have. We have active recruitment actions on those positions, we have barely been able to keep up with attrition really. We have people leaving all the time, and we hire to replace them and try to get ahead.

Our problem has been basically in the R&D area. We have been able to keep fairly close to the floors for the programs where we need mostly non-technical people. As soon as we try to hire scientists and engineers, we find ourselves in direct competition with the private sector where basically they can get more than we can give them. We find that extremely difficult. We have advertised, used word of mouth. We have gone to conventions to try to recruit people, we have had our recruiters visiting campuses, and we have not had a great deal of success.

Mr. YATES. That is not hard to understand when somebody sees what you are doing with your cutbacks, is it?

Miss FITZPATRICK. To be frank, in the last six months, people have said jobs in the Federal Government in any area, I have heard this from other agencies too, are not very secure, and if I am going to be the last one in, I expect I will be the first one out. That does have an effect.

EXXON OVERCHARGE FUNDS

Mr. YATES. I suspect it would have. Do you have any oversight over the distribution of the Exxon $2 billion payback?

Miss FITZPATRICK. No, sir, I wasn't involved in that distribution. That was done by the Economic Regulatory Administration.

Mr. YATES. Will they continue to monitor use of the Exxon funds?

Miss **Fitzpatrick**. The court order requires them to send us a report each year on how they are used.

Mr. **Yates**. Well, Cnservation has been monitoring these funds in the past. Now, you won't have anything to do with monitoring the Exxon funds themselves, but you will get a report, you say?

Miss **Fitzpatrick**. The present court order requires that the States give us reports of what they have done with the money.

Mr. **Yates**. Are there any Federal regulations governing the distribution?

Miss **Fitzpatrick**. That issue has come up, and it is being studied right now as to exactly what is the legal requirement.

Mr. **Yates**. By you?

Miss **Fitzpatrick**. By the Department, yes.

Mr. **Yates**. Have you received any correspondence from the court on monitoring?

Miss **Fitzpatrick**. Yes, we have had a request from the court for advice on monitoring, and we are preparing our answer, and we will be as helpful to the court as we can.

Mr. **Yates**. Do you want to make copies of your correspondence available to the committee?

Miss **Fitzpatrick**. That could be done, yes.

[The information follows:]

The Secretary of Energy
Washington, DC 20585

March 31, 1986

Honorable Thomas A. Flannery
Judge of the United States District
Court for the District of Columbia
Washington, D.C. 20001

Dear Judge Flannery:

On March 4, 1986, you wrote me concerning the distribution of overcharge funds collected pursuant to your order in United States v. Exxon Corporation, Civil Action No. 78-1035. In your letter you referred to a February 26, 1986, letter to you from Congressman John D. Dingell, Chairman of the Subcommittee on Oversight and Investigations of the House Committee on Energy and Commerce.

As you noted in your letter, "Mr. Dingell seems to think that without closer monitoring, abuses will take place and restitution will be thwarted." Mr. Dingell suggests that the Department's interpretation and implementation of your order are inadequate to effect restitution. We respectfully disagree.

It is true that the Department does not propose to "monitor" the Exxon distributions in exactly the same way as it does distributions of appropriated funds under the Department's regulations. Under the conservation regulations, the Department distributes the appropriated funds piecemeal to the states for Department-approved state plans. We believe that your order sets up a different scheme to effect restitution, a scheme in which the Department has an advisory role with respect both to the states and the Court and in which the chief elected officers of the jurisdictions are made directly responsible for carrying out your order.

To insure that the states understood the restitutionary purposes for which the funds were to be made available to them, the Department sought and obtained written confirmation from the Governors of all the eligible jurisdictions that they understood the limitations on the use of the funds and agreed to abide by those limitations. No Exxon funds were disbursed to any jurisdiction until that statement of assurance was received by the Department.

In addition, the Department is prepared to advise the states as to the appropriate uses of the funds under your order. We believe that your order authorizes expenditure of the Exxon funds by a state for any purpose allowable under the Warner Amendment, including all uses described in the statutes and implementing regulations that had been adopted at the time of your order of February 26, 1986. Attached is a list of all such uses. In addition, the Department will receive and review the annual reports from each jurisdiction and will report to and advise the Court on the expenditures.

The Department believes that the terms of your order are sufficiently comprehensive to effect restitution. The Governors have given every indication in the specific, unambiguous language of their statements of assurance that they intend to comply with the requirements of your order.

As I hope you agree, the Department is implementing your order to fulfill the restitutionary objectives that it manifestly is crafted to assure.

Yours truly,

John S. Herrington

John S. Herrington

Enclosure
List of restitutionary programs

cc: Honorable John D. Dingell
Chairman, Subcommittee on Oversight and Investigations
Committee on Energy and Commerce

Honorable James A. McClure
Chairman, Committee on Energy and Natural Resources

WEATHERIZATION ASSISTANCE PROGRAM

PERMITTED STATE ACTIVITIES

I. **Program Administration**

Ten percent of the grant amount, at least half of which must be passed through to subgrantees.

II. **Weatherization Materials**

Includes caulk and weatherstrip, insulation, furnace efficiency modifications, and other mechanical/architectural devices designed to reduce energy use and repair materials necessary to make the installation of weatherization materials effective.

III. **Program Support**

Includes labor, supervisors, vehicles, warehouse/storage space and associated personnel and other reasonable costs necessary to install materials in eligible dwellings.

IV. **Technical Assistance**

Includes monitoring of and training and technical assistance in all facets of the program.

V. **Liability Insurance**

VI. **Low-Cost/Now-Cost Weatherization Activities**

Includes energy saving materials with a cumulative value of less than $50/home.

INSTITUTIONAL CONSERVATION PROGRAM

Permitted State Activities

I. Program Administration

- Up to 5 percent of total amount of grants awarded within the State during the grant cycle, to be matched 50/50 by State funds.

II. Program Measures

- Technical assistance analyses specialized studies to identify and specify energy savings and related cost savings that are likely to be realized as a result of modifying maintenance and operating procedures in a building, acquiring and installing one or more specified energy conservation measures in a building, or both.

- Energy conservation measures, including but not limited to
  - Insulation of the building structure and systems within the building;
  - Storm windows and doors, multiglazed windows and doors, heat absorbing or heat reflective glazed and coated windows and door systems, additional glazing, reductions in glass area, and other window and door systems modifications;
  - Automatic energy control systems which would reduce energy consumption;
  - Equipment required to operate variable steam, hydraulic, and ventilating systems adjusted by automatic energy control systems;
  - Active or passive solar space heating or cooling systems, solar electric generating systems, or combination thereof;
  - Active or passive solar water heating systems;
  - Furnace or utility plant and distribution system modifications including:
    - (1) Replacement burners, furnaces, boilers, or any combination thereof, which substantially increase the energy efficiency of the heating system;

(2) Devices for modifying flue openings which will increase the energy efficiency of the heating system;

(3) Electrical or mechanical furnace ignition systems which replace standing gas pilot lights; and

(4) Utility plant system conversion measures including conversion of existing oil and gas-fired boiler installations to alternative energy sources, including coal;

•• Addition of caulking and weatherstripping;

•• Replacement or modification of lighting fixtures to increase the energy efficiency of the lighting system without increasing the overall illumination of a facility, unless such increase in illumination is necessary to conform to any applicable State or local building code or, if no such code applies, the increase is considered appropriate by the Secretary;

•• Energy recovery systems;

•• Cogeneration systems which produce steam or forms of energy such as heat, as well as electricity for use primarily within a building or a complex of buildings owned by an eligible institution and which meet such fuel efficiency requirements as the Secretary may by rule prescribe;

•• Such other measures as the Secretary identifies by rule for purposes of this part, as set forth in Subpart D of 10 CFR Part 450; and

•• Such other measures as a grant application shows will save a substantial amount of energy and are identified in an energy audit in accordance with § 455.19, its equivalent, an energy use evaluation, or a technical assistance report.

Several typical projects in the ICP programs are highlighted below:

- ICP funds have supplemented Ohio State University's energy conservation efforts, which save the university approximately $5.5 million per year. University officials believe that without their energy conservation program tuition costs for each student would be about $100 per year higher. ICP has funded projects in 15 campus buildings since 1980.

- A Nevada high school installed the second of three evaporative coolers. The energy-efficient system, which saved over $28,000 in energy costs during its first year of operation, received a Special Award in the Department of Energy's 1985 technology-transfer competition, and was funded in part by an ICP grant.

- ICP funds have supplemented the Washington, D.C., Children's Hospital energy conservation efforts through the installation of pneumatic controls which are projected to save the hospital more than $100,000 per year.

- Cooper Green Hospital in Birmingham, Alabama, used an ICP grant as seed money to leverage an additional $377,000 of private financing which, combined, saved 2-3 times the energy ICP dollars alone could have achieved.

- A primary school in Londonderry, Vermont, converted its's boiler to a dual wood-oil system. This was installed at a cost of $50,000 and will save approximately $10,000 of the schools annual heating cost (payback of less than 5 years).

Permitted Activities under the State Energy Conservation Programs and the Energy Extension Service

The program rule for the State Energy Conservation Program (SECP) (10 CFR 420.12) states that the purpose of the program is to; "...promote the conservation of energy and reduce the rate of growth of energy demand through the development and implementation of comprehensive state energy plans". The states are required by the enabling legislation to include in their comprehensive plans and programs five mandatory measures as follows:

(1) Right-turn-on-red
(2) Program measure to promote car pooling and van pooling
(3) Energy efficiency standards to be followed in state procurement practices
(4) Thermal efficiency standards for new and renovated building
(5) Lighting efficiency standards for all buildings

In addition, the states are encouraged to develop and maintain other discretionary programs that will increase energy efficiency within the states. The states have great flexibility concerning discretionary measures as long as their programs do not fall under "prohibited expenditures" as follows:

"(a) No financial assistance provided to states under this part shall be used-

(1) For construction, such as construction of mass transit systems and exclusive bus lanes, or for construction or repair of buildings or structures;

(2) To purchase land, a building or structure or any interest therein;

(3) To subsidize fares for public transportation;

(4) To subsidize utility rate demonstrations or state tax credits for energy conservation;

(5) To conduct or purchase equipment to conduct research, development or demonstration of conservation techniques and technologies not commercially available; or

(6) To purchase or install equipment or materials for energy conservation building retrofits or weatherization.

(b) No more than 20 percent of the financial assistance awarded to the state for this program shall be used to purchase office supplies, library materials, or other equipment whose purchase is not otherwise prohibited by this section.

(c) Demonstrations of commercially available conservation techniques and technologies are permitted, and are not subject to prohibitions of 465.11(a) (1) and (6) or to the limitation on equipment purchases of 465.11(b)

(d) A State may use regular of revolving loan mechanisms to fund services which are consistent with this part and which are included in the state's approved Plan. The State may use loan repayments and any interest on the loan funds only for activities which are consistent with this part and which are included in the state's approved Plan."

Similarity the EES regulation 10 CFR 465.11 directs the states to:

(a) "Establish a positive outreach program directed toward small business and individual energy users..."

(b) "Stimulate, provide for and supplement program for the conduct of evaluation, planning and the other technical assistant of energy conservation efforts including outreach activities."

Again, the states are provided great flexibility as long as they adhere to the same "prohibited expenditures" cited under the SECP, above.

In summary, the states are provided the flexibility of developing and maintaining a wide range of energy conservation programs to meet the diversity of conditions and local needs and opportunities found in each state. And, indeed, there is great diversity and it is not possible to provide a definite statement of all programs without a major effort of analysis, segmentation and compilation. However, the following projects/programs provide an illustration of state SECP/EES programs carried out in 1985 and are indicative of the types of programs/projects that the states could carry out as long as they adhere to the "prohibited expenditure" rules cited above.

- The North Carolina Energy Division contracted with private engineering firms to provide detailed engineering analysis to 18 municipal water and wastewater treatment facilities to identify energy conservation potential in operating/maintenance procedures, low-cost improvements and high capital cost modifications. Studies have shown that most municipalities spend 30-35 percent of their energy dollars on utilities, including water/wastewater facilities. Engineering analyses completed on the first twelve (12) facilities indicate a very positive potential for energy savings, in the range of 14 percent to 35 percent of the plant's annual energy bill, depending on the implementation of recommended energy conservation measures. With the completion of these analyses, the Energy Division contracted for the development of case studies utilizing the results of the audits. The final step in this program was the development of a workbook incorporating both a "how-to" audit and the case studies. A series of workshops was conducted using the workbook and was targeted to system operators and plant operating personnel.

- The state of Kentucky has designed a Local Government Energy Management Program aimed at lessening the burden of energy costs on tight local government budgets. Under this program, a position of energy coordinator was offered to local governments on a competitive basis for a twelve-month period. Following the twelve-month period, each local unit of government must decide whether to continue the position or not. Funds for the position are then expected to be obtained by the local government from cost savings accrued during the initial twelve month period. This would be achieved from the various energy conserving projects recommended by the coordinator and implemented by the local government. By expanding the program to include the private sector, the local government may also provide to local businesses the opportunity to receive assistance from the coordinator in terms of offering advice on energy Conservation programs they can use to save money and energy in their businesses. In turn, the local government may receive from the business community financial support for the position's continuation.

- The Mississippi Department of Energy and Transportation developed a comprehensive Transportation Management Program which is being utilized statewide in public school districts. Working with the State Department of Education and institutions of higher learning, the primary objective is to provide school administrators with organizational and procedural strategies for implementing an effective energy management program. Regional administrator workshops are conducted to emphasize the economic advantages of implementing the services available through the Department which include: (1) Computerized bus routes and schedules, Computerized operational and maintenance cost control reporting/recordkeeping, and (3) Driver training workshops which emphasize improved efficiency and safety through modification and improvement of driving habits. An administrator handbook, driver training manual, and other materials were distributed statewide.

- The Alabama Energy Division in the Department of Economic and Community Affairs has an active energy education program aimed at making the citizens of Alabama aware of the nature and importance of energy, energy alternatives, and energy conservation. A major effort was to develop energy education software for use in elementary and secondary schools. By blending the skills of energy engineers, computer scientists, and progressive public school teachers, this unified effort helped ensure that the energy facts presented not only informed the students but helped ensure that the energy facts presented not only informed the students but helped develop better math and science comprehension.

Department of Energy
Washington, DC 20585

April 7, 1986

Honorable Thomas A. Flannery
Judge of the United States District
Court for the District of Columbia
Washington, D. C. 20001

Dear Judge Flannery:

On March 31, 1986, Secretary Herrington responded to your letter of March 4, 1986, in which you solicited the Department's views on matters raised by Chairman John Dingell.

Attached to Secretary Herrington's letter were descriptions of the state activities authorized by the various DOE conservation programs that may be the recipients of overcharge funds disbursed to the states, territories and possessions of the United States as a result of your decision and orders in United States v. Exxon Corporation, Civil Action No. 78-1035. These descriptions included references to the permissible use of portions of federal appropriated funds for administrative expenses associated with the programs. Upon reflection, we are concerned that the references to permissible uses of federal appropriated funds for administrative expenses may inadvertently mislead the court as to the Department's position concerning the proscription against use of the Exxon overcharge funds for such purposes.

The Department wishes to make clear its view that, absent modification by you, we believe that your decision and orders prohibit use of Exxon funds for administrative expenses.

Sincerely,

Carl A. Corrallo
Solicitor
Economic Regulatory Administration

cc: Honorable John D. Dingell
Chairman, Subcommittee on Oversight and Investigations
Committee on Energy and Commerce

Honorable James A. McClure
Chairman, Committee on Energy and Natural Resources

GRANT MONITORING

Mr. YATES. All right.

With your cutbacks, will you be able to monitor the programs that the Congress has appropriated money for?

Miss FITZPATRICK. In the State and Local Assistance Programs, sir?

Mr. YATES. Everything, really.

Miss FITZPATRICK. Yes. In particular with the State and Local Assistance Programs, although we didn't ask for appropriations for grants—we have asked for an appropriation to cover the people who will be required to monitor the existing Federal grants and to continue to provide guidance and technical assistance to the States.

DISBURSEMENT OF GRANT FUNDS

Mr. YATES. With respect to state and local programs, are you willing to seek a rescission of the 1986 funds?

Miss FITZPATRICK. I have not supported that, and I have not heard that it has been decided.

Mr. YATES. Where are the funds presently? At what stage in disbursement are they for the state and local programs?

Miss FITZPATRICK. Those four programs are in the midst of their normal cycles, so the funds have been sent to the field. As annual State applications programs are submitted and approved, those funds are disbursed to the states. Generally those are sent out on a piecemeal basis because the states do not receive their allotment at one time; they receive it as it is required.

INNOVATIVE FINANCING MECHANISMS

Mr. YATES. The committee wonders about funds being available from other sources, while overcharge funds are expended. Are there other viable sources outside of state and Federal appropriations?

Miss FITZPATRICK. We have been working with the States for the last two years on developing non-Federal resources to apply to energy conservation programs, and we have had some success in this largely because the industry and, in particular, utilities are beginning to realize that it is to their advantage to increase the energy efficiency of their customers. We are encouraging this both in the state and local programs and also through a program working with utilities in least cost planning.

We have seen a number of utilities around the country putting very substantial amounts of money into weatherization and institutional conservation measures and industrial conservation and commercial building measures. For example, Northeast Utilities has just announced they will be putting $250 million into those kinds of programs over the next 15 years in just two states in New England. Pacific Gas and Electric Company, which is the largest utility in the country, is very active in this. They have found that they can spend $1 on conservation measures and working with their customers on load management and avoid $7 in capital costs for new capacity by reducing their demand.

We know these things can be done, and that is why we are working with utilities, the National Association of Regulatory Utility Commissioners, EPRI, and other interested organizations, to get all this information together and disseminate it. The federally funded program has proven that conservation is a sensible business investment, and people should be putting their resources into that instead of just paying for energy.

Mr. Yates. Good statement.

What about single-family homes, low-income homes?

Miss Fitzpatrick. Those are also a focus of the efforts that I have described.

RADON GAS EXPOSURE

Mr. Yates. Let's talk about radon gas exposure. Does your research indicate the causes of high radon levels?

Miss Fitzpatrick. Yes, Mr. Chairman. We do have information on where the gas is coming from; the soil types. We are beginning to learn more about the soil types that lead to the radon gas. High uranium in the soil and permeability of the soil are important. We are also learning about what types of buildings are susceptible to having the gas infiltrate. If you have a basement, you are worse off than if the house is built on a slab, for example, so we are studying how the radon gets into the building and what can be done to mitigate the entry. Either keep it from getting in or get it out once it gets in.

The danger is the concentrations of the gas building up inside a building. We are doing that work in cooperation with the Department's Office of Energy Research, and the Environmental Protection Agency. There are several issues that we are each addressing on what are the true risks involved, for example, in radon concentrations.

Mr. Yates. Is that a pollutant only to homes? What about apartment buildings?

Miss Fitzpatrick. I think apartment buildings may tend to have better ventilation systems than single-family homes.

Mr. Yates. They are draftier. If that is the same term.

Miss Fitzpatrick. Yes. Radon gas is omnipresent. It is in bricks and granite, it is in the soil, and the real problem is when it gets into a fairly small space that is not well ventilated.

Mr. Yates. How much of a health problem is it?

Miss Fitzpatrick. That is still somewhat of an issue, and there are some epidemiological studies being done to try to determine exactly what the risks are.

Mr. Yates. Can this be a true projection; 10,000 deaths a year from radon gas?

Miss Fitzpatrick. That is one of the figures that is thought to be fairly accurate. I really don't know. It is difficult to say because it is difficult to separate the radon effects from other effects, other things that may be in the houses, people smoking, other forms of air pollution and other causes for cancer, which I think everybody will say are not thoroughly understood.

But 10,000 lung cancer cases a year from radon is one of the figures that is often used.

Mr. **Yates**. What is your role as contrasted with that of EPA?

Miss **Fitzpatrick**. EPA is working on the question you just asked, "What are the real risks?" "Does radon cause cancer, and at what levels of exposure?" We are working on how radon gets into buildings and what can be done about the design of buildings to prevent it from getting in or to increase the ventilation, to get it out again before it builds up.

Mr. **Yates**. I keep thinking of my apartment in Chicago. I am weather-stripping all the windows and all the doors. I don't have to worry about that because it is an apartment building, right?

Miss **Fitzpatrick**. I can't say that, Mr. Chairman. I would leave a little gap in my weather-stripping.

Mr. **Yates**. How much of a hazard is it in Washington?

Miss **Fitzpatrick**. I don't spend a lot of time in my house either.

Mr. **Yates**. I take it there is no radon in office buildings?

Miss **Fitzpatrick**. Oh, I can't say that, Mr. Chairman. I think radon is everywhere. The question is one of concentration.

Mr. **Yates**. When did they first discover radon?

Miss **Fitzpatrick**. Madam Curie, I think, discovered it.

Mr. **Yates**. In her house?

Miss **Fitzpatrick**. In her laboratory.

Mr. **Yates**. Well, is any particular area of the country more susceptible than others?

Miss **Fitzpatrick**. Yes. Several areas have been identified as having soils——

Mr. **Yates**. Besides California?

Miss **Fitzpatrick**. Pennsylvania. There is an area called Reading Prong that extends from Pennsylvania to New York and even into Connecticut. That is one of the best known areas.

Mr. **Yates**. Not related to the Centralia fire?

Miss **Fitzpatrick**. No.

Mr. **Yates**. Pennsylvania seems to be collecting those hazards. What work are you doing in this area? Any? I know you are doing a little work. Do you have enough money?

Miss **Fitzpatrick**. Yes, I think we have enough money to do that work.

Mr. **Yates**. I take it you are not going to do very much work on it?

Miss **Fitzpatrick**. Well, we have already done work. I think we have enough to do on our part, which is to determine what it is in a building design that allows the radon to infiltrate and how you get rid of it.

INDOOR AIR QUALITY

Mr. **Yates**. We have got enough money to get rid of the radon? What about other measures for indoor buildings?

Miss **Fitzpatrick**. We have work going on on other indoor pollutants.

Mr. **Yates**. Such as what?

Miss **Fitzpatrick**. There are things such as volatile compounds in glues, paints.

Mr. **Yates**. You are not talking about glue sniffing?

Miss **Fitzpatrick**. No. They are found in common household materials, such as cooking gases, and we are doing some work on what those are and whether there is any problem to them. The whole thing comes under our purview.

Mr. **Yates**. You mean over and above the gas burnt, there is a residue?

Miss **Fitzpatrick**. Yes. If you are burning any fuel, such as natural gas, in a home, you have carbon monoxide being produced.

Mr. **Yates**. Is there carbon monoxide being produced by the burning of natural gas?

Miss **Fitzpatrick**. Oh, yes.

Mr. **Yates**. So you can't weather-strip a natural gas home, can you?

Miss **Fitzpatrick**. Even if you weather-strip, most homes are pretty drafty. You have to work to really tighten up a home.

Mr. **Yates**. Well, you had better not.

Miss **Fitzpatrick**. That is one of the issues.

Mr. **Yates**. Is that what you are discovering?

Miss **Fitzpatrick**. That is why we are interested in it. It is thought that one of the best ways to save energy in the home is to tighten it up, to reduce the infiltration of air, but there may be a point beyond which you wouldn't want to go. You would probably want to have one-and-a-half total air changes per hour in your home.

Mr. **Yates**. Do you have enough money to work on that?

Miss **Fitzpatrick**. Yes, I think we have enough money. This is the indoor air quality line. I think we have enough money. It is funded at the same level as last year.

Mr. **Yates**. Was last year's adequate?

Miss **Fitzpatrick**. Yes, it was, sir.

BUILDING ENERGY PERFORMANCE STANDARDS

Mr. **Yates**. What do you mean by "voluntary consensus standards"?

Miss **Fitzpatrick**. This is in reference to Building Energy Performance Standards. We have been working very hard with such groups as the ASHRAE, the American Society of Heating, Refrigeration and Air Conditioning Engineers, and the American Institute of Architects, and builders, because we want to have a consensus in the industry about what is possible, economically and technically feasible, from an energy conservation point of view, desirable in buildings, both commercial buildings and residential buildings.

Several years ago, the department, under congressional legislation, issued some standards for building efficiency, and it caused a tremendous uproar in the industry.

We had about 40,000 pages of comments, moderately adverse. So, we decided the thing to do is to get everybody to work together and agree on what are reasonable standards before we tried to issue a new set.

All we did was make more work for ourselves and never really accomplished anything. This way we can accomplish something.

Mr. **Yates**. One of these days, you are going to have to leave voluntarily, aren't you, and promulgate a system of standards people have to comply with.

Miss **Fitzpatrick**. No, the Congress changed the legislation, so for the private sector the standards are voluntary, and we have been asked to issue advisory standards.

Mr. **Yates**. I have to make a call.

Miss **Fitzpatrick**. Mr. Chairman, I have just been advised by the director of our buildings office that you are safe in your apartment.

INDUSTRIAL PROGRAM BUDGET

Mr. **Yates**. Thank you. He is absolutely right, it is very drafty. In Chicago that isn't too tough.

In last year's testimony, on page 331, you have a statement of the year-ago dollar savings attributable to the industrial program, and you say to date a total of 116 trillion Btu savings have been accumulated, and represents $580 million in energy.

The current annual savings is about 40 trillion Btu's worth $300 million, and the total cost of the program, said Mr. Streb, was $261 million for the life of the program.

Apparently, the money expended for your program was worthwhile. If your program is continued, will the amount of energy savings continue to be realized?

Miss **Fitzpatrick**. Yes, I think so, Mr. Chairman.

Mr. **Yates**. Well, if you are doing such good work and we are gathering so much in savings, why should we reduce your program from $41 million to $15, which is what you want to do?

Miss **Fitzpatrick**. I am sorry, those figures confuse me. I am sorry—just for the Industrial Programs.

Mr. **Yates**. Yes, the budget constraints are such—you want me to answer it?

Miss **Fitzpatrick**. I am afraid it is the same answer I have already given you, Mr. Chairman. I agree the programs are useful, that they have good payoff. The sole driving force in that budget level is the overriding need to reduce the deficit.

Mr. **Yates**. How does your level of funds compare with those of other countries for the same purpose? Do they spend more than you do for the purpose?

Miss **Fitzpatrick**. On a normalized basis versus GNP and population size, most countries do not. I am talking about most countries within——

Mr. **Yates**. What about the Japanese?

Miss **Fitzpatrick**. I think the Japanese might be spending more. If we reduce to what we have requested, there will be three countries, I think, that will be spending more on a GNP basis than we are, although that is not——

Mr. **Yates**. Are they smarter than we are?

Miss **Fitzpatrick**. No. That is not an entirely fair way to make a comparison, because a country's decision in that respect depends on indigenous supplies, what the industrial base looks like, a number of different factors.

I don't think there is a simple way to compare one country to another. We are more advanced in technology than many countries are. Some are working on a catch-up basis. I think it is dangerous to make simple comparisons.

Mr. **Yates**. All right. We won't do it, then.

Now, all this was cost-shared, wasn't it?

Miss **Fitzpatrick**. The bulk of our R&D programs, yes, sir, are cost-shared.

Mr. **Yates**. It doesn't make sense to cut them out if industry is willing to contribute its share to the research, is it?

Miss **Fitzpatrick**. That is true.

Mr. **Yates**. I would think where you have a cooperative venture going with industry that is willing to share the cost with you, the program has some validity.

Miss **Fitzpatrick**. That has been one of the reasons we have cost-shared, because it does prove the validity and interest of somebody in using the results of what we are doing.

Mr. **Yates**. Will industry make up the difference, in your opinion?

Miss **Fitzpatrick**. I don't think they will make up the entire difference, no.

STEEL INDUSTRY RESEARCH

Mr. **Yates**. All right.

Now, you are deferring funds for the steel industry's participation, aren't you?

Miss **Fitzpatrick**. Yes, sir.

Mr. **Yates**. Is the research involved long-term, high-risk technology?

Miss **Fitzpatrick**. The research proposed was not very well defined. It would have been long term. As much as it was defined, it was very much similar to programs we are continuing in sensors and process controls.

I have been meeting with the steel industry to——

Mr. **Yates**. How do you get a definition that you can accept?

Miss **Fitzpatrick**. We have been meeting with the steel industry. I met with representatives about three times in the last couple of months to work on just exactly what it is that the industry wants to do, what they see their needs are, and how we can match our resources to maximize the effect.

Mr. **Yates**. You have a project to build a pilot plant for thin strip casting of steel. That is being terminated?

Miss **Fitzpatrick**. Yes, sir.

Mr. **Yates**. Not a valuable project?

Miss **Fitzpatrick**. Well, we are continuing to support the design, the process design. What we are not supporting is that the Federal Government should actually build a plant.

Mr. **Yates**. Will private industry build a plant?

Miss **Fitzpatrick**. If they think the results of the design are worthwhile.

Mr. **Yates**. When will you finish the design?

Miss **Fitzpatrick**. I believe we will be completing that soon. Mr. Streb can answer the question.

Mr. **Streb**. We actually have two projects ongoing, one of which, the smaller of the two projects, will be completed this year; the larger of the two will be completed next year.

Mr. **Yates**. Does the technology look promising?

Mr. **Streb**. The technology looks very promising.

Miss **Fitzpatrick**. We are really working on two technologies, Mr. Chairman.

Mr. **Yates**. Is that technology related to the technology expected to be developed in the steel initiative?

Miss **Fitzpatrick**. Yes. One of the purposes of the steel initiative was to develop what was called near net shape casting; casting the steel in some state very close to what the final product would look like, and that means going from a very thick slab of steel, a foot or 18-inches thick, to a thin strip.

It comes out very close to being a sheet. That is why I mentioned that some of the things proposed in the steel initiative we are already doing.

HARDWARE DEVELOPMENT RESEARCH

Mr. **Yates**. Your budget says you are going to minimize hardware development for recouperaters and heat pump programs.

Haven't hardware development programs been particularly successful in this respect?

Miss **Fitzpatrick**. Yes. That is the end point. That is the product development and applications for the whole research and development spectrum.

And because of our fiscal constraints, we are concentrating on the materials research and design end of it and leaving the hardware development and product development to the manufacturers.

Mr. **Yates**. What about the hardware testing for the ceramic material?

Miss **Fitzpatrick**. We are continuing the test of ceramic materials.

Mr. **Yates**. At what stage will you complete the Brayton cycle system?

Miss **Fitzpatrick**. May Mr. Streb answer that?

Mr. **Yates**. Sure, ma'am.

Mr. **Streb**. We have not requested funds for the externally fired Brayton system for 1987, and therefore, the effort that has been supported for the last few years will be wrapped up at design of the system.

Mr. **Yates**. How long will that take?

Miss **Fitzpatrick**. It will be roughly through this calendar year.

Mr. **Yates**. You are terminating bottoming cycle research?

Mr. **Streb**. Not in its entirety. We are supporting one small project on a promising, very innovative—what we call the sodium heat engine.

It could be used in the application of bottoming.

Mr. **Yates**. Are you doing any work on the steam diesel engine?

Mr. **Streb**. Yes, we are. We have been supporting the project on that for roughly the last three or four years. Work will continue at a very low level into fiscal year 1987.

Mr. **Yates**. Is that an important project, do you think?

Mr. **Streb**. It is intriguing, because it enables us to operate with the refined coal. Of course, we have abundant supplies, and operate in a mode where we have a high conversion efficiency. It is an efficient system using an indigenous resource we have vast amounts of.

Mr. **Yates**. How much have you accomplished in your programs for development of advanced coal combustors? Are you going to terminate those, too?

Mr. **Streb**. This is a joint effort with the Office of Fossil Energy, and progress has been made on three systems which are largely retrofit systems. I believe that those activities will continue. I am advised that the joint efforts will be completed this year.

Mr. **Yates**. What is the next logical step?

Mr. **Streb**. I would have to say it would be commercialization of the technology that has been evolved so far.

Mr. **Yates**. You are going to let industry do it from here on, right?

Mr. **Streb**. Yes, sir.

ENERGY ANALYSIS CENTERS

Mr. **Yates**. You are cutting out the Energy Analysis Diagnostic Centers. Do they serve no useful purpose?

Miss **Fitzpatrick**. I think those centers have been very useful. We think we have served the purpose of proving that it can be done, that it is a good investment for industry.

We have developed the expertise in the universities among the faculties and students to show them how to run the program, and it can be something that is a good source of training and even income to them.

So, I think, under our present constraints, that is a program that we can afford to turn over to them now.

Mr. **Yates**. Is it cost effective?

Miss **Fitzpatrick**. From the point of view of the people who receive the services, it certainly is.

Mr. **Yates**. Is that program dead without Federal assistance? Do you think the people would take it up?

Miss **Fitzpatrick**. I think there is a great incentive for those university centers to continue with it.

Mr. **Yates**. They are going to have to find a special endowment?

Miss **Fitzpatrick**. I think they should charge for their services, because we have proved the point that it is very cost effective.

STIRLING ENGINE RESEARCH

Mr. **Yates**. Stirling engines, have any MOD-2 engines been built?

Miss **Fitzpatrick**. There is a prototype MOD-2 engine, yes.

Mr. **Yates**. How much testing has been done on it?

Miss **Fitzpatrick**. The testing has just begun.

Mr. **Yates**. When did it begin?

Miss **Fitzpatrick**. Within the last month or so.

Mr. **Yates**. How much has been done on the MOD-1 engine?

Miss **Fitzpatrick**. About 14,000 hours of testing.

Mr. **Yates**. Is that enough to test the MOD-1 engine?

Miss **Fitzpatrick**. I think that is sufficient to test the MOD-1 engine, yes.

Mr. **Yates**. What about MOD-2?

Miss **Fitzpatrick**. The MOD-2 test will be continuing over the next couple of months.

Mr. **Yates**. Just a couple of months?

Miss **Fitzpatrick**. Yes.

Mr. **Yates**. Is that enough?

Miss **Fitzpatrick**. Under the current funding plans, yes.

Mr. **Yates**. You are going to cancel that program, aren't you?

Miss **Fitzpatrick**. I am told that that has been changed from a deferral to a rescission.

Mr. **Yates**. So, you are leaving it up to us, then?

Miss **Fitzpatrick**. Yes, sir.

Mr. **Yates**. How active is the interest on the part of the industrial participants in the MOD-2 technology?

Miss **Fitzpatrick**. We have no indication of interest from the auto industry. We do have indication of interest on the Stirling engine, MOD-1 or MOD-2, principally MOD-1, because that is the one that is available and known, for non-transportation uses or non-automotive uses.

The engine shows a high efficiency. It runs well, if it can run at a steady rate. It does not respond well to changes in power demand.

[Committee note.—The following information was provided by the D.O.E. upon request last year.]

AUTOMOTIVE GAS TURBINE AND MOD-II STIRLING ENGINE PASSENGER VEHICLE ACCELERATION CRITERIA

The Automotive Stirling Engine MOD-II design and the two advanced Automotive Gas Turbine (AGT) proof-of-concept engine designs are all projected to have vehicle acceleration performance comparable to current spark ignition (S.I.) engines when installed in vehicles in the 3000 lb. weight class.

Table E-9 from the MOD II Basic Stirling Engine Design Review Report (MT185TR24) of April 2, 1985 shows the acceleration time in seconds from 0 to 60 miles per hour (MPH) for a Chevrolet Celebrity with and S.I. engine and with the MOD II Stirling engine. The S.I. accleration time is 15 seconds and the MOD II is 13 seconds.

The AGT 101 Garrett/Ford gas turbine acceleration time in a Ford Fairmont is projected to be approximately 12 seconds as compared to 15 seconds for the S.I. engine Figure 1 from the AGT 101 Reference Powertrain Design Review of January 29, 1980 shows this comparison. Similarly, the AGT 100 General Motors-Allison gas turbine installed in a Pontiac Phoenix size vehicle would achieve a 0 to 60 MPH acceleration in 12.5 seconds compared to 15 seconds for a conventional S.I. engine. Figure 2 based on data from an Allison paper of November 11, 1980 illustrates this vehicle speed-acceleration time relationship.

Miss **Fitzpatrick**. So, it is good for electrical generation, for pumping water, perhaps for driving barges, and we have inquiries about testing it. The Army would like to test if for field electrical generation unit, and we think it shows great promise there.

We are also developing a Stirling engine in the thermally activated heat pump program and also using it in the solar program on solar thermal electrical generation systems.

Mr. **Yates**. What if Congress provides another $8 million? Will the prime contractor find industrial partners willing to share?

Miss **Fitzpatrick**. I don't know whether they could, Mr. Chairman. So far, there has been no cost-sharing on that program, although the Federal Government has put about $115 million into it.

Mr. **Yates**. A lot of money.

GAS TURBINE PROGRAM

Are you going to test only one of the automotive engines?

Miss **Fitzpatrick**. The gas turbine?

Mr. **Yates**. Yes.

Miss **Fitzpatrick**. We are going to continue with the component development, maintaining one of the engine designs as a test rig for those components.

Mr. **Yates**. Why only one?

Miss **Fitzpatrick**. Basically because of budget constraints.

Mr. **Yates**. Well, isn't it smarter to continue two? Isn't one of the companies likely to make the breakthrough, and you don't know which one, do you?

Miss **Fitzpatrick**. That is true.

Mr. **Yates**. It will be the one that you don't finance——

Miss **Fitzpatrick**. We are also open to cost-sharing offers from those companies.

Mr. **Yates**. Are you likely to get it?

Miss **Fitzpatrick**. I hope so. We are certainly talking to them.

Mr. **Yates**. Are they talking back?

Miss **Fitzpatrick**. Yes, I think so.

Mr. **Yates**. Are the teams of about equal quality?

Miss **Fitzpatrick**. Yes, I think so. I am told that we would have a tough time making a choice between them. Basically, it will come down to what they are willing to do.

Mr. **Yates**. How many engines does each have?

Miss **Fitzpatrick**. Four or five. I know Garret has about four or five which they are constantly assembling and disassembling.

Mr. **Yates**. How much would it cost to keep your second contract?

Miss **Fitzpatrick**. To keep both of them going at about the same level would cost—we have asked for about $4 million. It would cost about the same to keep the second one going.

Mr. **Yates**. That is one of your really promising programs, isn't it?

Miss **Fitzpatrick**. I think so, Mr. Chairman, yes.

Mr. **Regula**. Mr. Chairman, will you yield?

CERAMIC ENGINE DEVELOPMENT

Mr. **Yates**. Sure, I will yield.

Mr. **Regula**. Along the line you were just questioning on the engines, I understand the Japanese are producing in the area of 5,000 cars a month with ceramic turbo chargers.

Do you think this would indicate they might get ahead of us in the development and use of ceramics and engine components?

Miss **Fitzpatrick**. Mr. Regula, I think that the competition from the Japanese on ceramics is very high. As far as we know, they do not have the engines that we have, all ceramic engines.

They do have, we know, very, very fine components, especially for those small turbo rotors.

Mr. **Regula**. Do you have an engine that is totally ceramic and operable?

Miss **Fitzpatrick**. Yes, sir. We have two designs of totally ceramic gas turbine engines and they are built.

Mr. **Regula**. What is the limitation on going operational with those commercially?

Miss **Fitzpatrick**. The limitation is that we still have to figure out how to make the components at a high degree of reliability on a mass production basis.

Mr. **Regula**. Thank you.

ADIABATIC DIESEL COMPONENTS

Mr. **Yates**. Let's talk about the adiabatic diesels. Have any components been developed under this program that can be used in current diesel engines?

Miss **Fitzpatrick**. Yes. We have had some spin-offs. Cummin's Engine is looking to use some of those materials in the engines that they are now producing.

Mr. **Yates**. What happened to that Japanese-American? Oh, that was Cummins. I thought he went out by himself.

Miss **Fitzpatrick**. We are seeing our ceramic materials and high temperature metal alloy materials going into industry even ahead of the systems that we are developing them for.

We are seeing cutting tools, engine parts, as I mentioned, and airplane parts being produced. Those materials are being picked up by industry and tested and actually being sold now, in some instances.

And as a result, we are seeing——

Mr. **Yates**. I don't remember his testimony. He had testimony that lead me to believe that they were on the verge of a tremendous breakthrough in diesel engine technology. This was about three or four years ago.

Miss **Fitzpatrick**. Dr. Chiogiogi?

Mr. **Yates**. What happened to him?

Dr. **Chiogiogi**. He is still working. Adiabatics.

Mr. **Yates**. He is the one who testified there——

Dr. **Chiogiogi**. We are moving forward. We have an aggressive program that we are working with industry on right now. It is very, very good.

Miss **Fitzpatrick**. We are seeing a good deal more interest on the part of industry. They are increasing their own research programs.

Mr. **Yates**. Are they using ceramics in diesels?

Miss **Fitzpatrick**. That is one of the things they are looking at. I don't think there is a production vehicle yet, but they are looking into that and the high temperature metal alloys.

Mr. **Yates**. Where is the single cylinder test cell facility located?

Miss **Fitzpatrick**. At the Southwest Research Institute in Texas, and one at Purdue, also.

Mr. **Yates**. What does it cost to operate it?

Mr. **Streb**. It is part of the overall adiabatic diesel program. I honestly don't have a specific——

Mr. **Chiogiogi**. It is not very much.

[Committee note.—The department subsequentially provided their information, and it follows:]

Operational Costs for Single-Cylinder Diesel Test Facilities

There are currently two single-cylinder test facilities being utilized in the heavy duty adiabatic diesel technology program. One facility is located at Southwest Research Institute (SwRI) and is involved in evaluations and tests for the "Sliding Seal Materials Development" effort. The test facility is actually the property of SwRI, and program costs are limited to costs associated with engine modifications and operations. It is estimated that these costs are less than $90,000 per year.

The second single-cylinder test facility is located at Purdue University, and is used for model validation in the "Heat Transfer and Thermal Analysis Methodology" effort. The basic single-cylinder engine was donated to the program by Cummins Engine Company. Program costs involved installation, modifications, and sophisticated instrumentation for test operations. It is estimated that the operational costs for this facility are approximately $200,000 per year.

Mr. **Yates**. What does the term "adiabatic" mean? I looked at the word, and I thought it was diabetic.

Miss **Fitzpatrick**. It is a good Greek word. I had to look it up, too, Mr. Chairman. It means "heat does not go through." And the point of the engine is, instead of exhausting the heat—which carries a good deal of the energy contained in the fuel—instead of exhausting it through a radiator or exhaust pipe, as we do with our engines today, that heat is cycled back into the engine and used to preheat the air and fuel, and it is captured and translated into a mechanical force.

Most of the heat that is in auto fuel, truck fuel, is lost. Those engines run at about 30, 35 at best, percent efficiency. Most of the energy is lost, and the reason is that we must get that heat out of the engine, because we don't have materials that would survive the temperatures that would result if we kept it in the engine.

That is why we talk so much about materials. The key to running efficiently is high temperature, and the key to high temperature is materials.

Mr. **Yates**. How does adiabatics get into this? What is sought to be done with adiabatics?

Miss **Fitzpatrick**. The adiabatic diesel is designed for heavy trucks. They have an automotive gas turbine which will be used for heavy duty trucks and light trucks. It is a heavy duty truck engine.

Mr. **Yates**. Is it used for passenger car engines?

Miss **Fitzpatrick**. It could be, but we are designing this engine specifically for heavy duty trucks.

Mr. **Yates**. I keep wondering why Mercedes sells so many diesels.

Miss **Fitzpatrick**. One of the arguments that has been made is that because the American manufacturers are under a kind of dynamic lease from the EPA on diesel emission standards which have never been imposed but could be imposed, they don't have the incentive, or they have a disincentive to do any long-term development of a good diesel engine.

I don't know whether that is true or not. That is the argument that has been made. I have asked the same question, why is it that Mercedes and other European manufacturers have these wonderful diesel engines, and we hear so much about American diesel engines?

Mr. YATES. I have one.

Miss FITZPATRICK. I remember, and I have a Mercedes engine, and it runs great. That was the argument made to me. I really don't know whether that is true or not.

Mr. YATES. What about the Mercedes engine and EPA? Doesn't the Mercedes engine spew out those pollutants?

Miss FITZPATRICK. Yes, but at the present time there aren't regulations, and if they were imposed they would simply stop selling in this country and have a viable market in Europe. U.S. manufacturers wouldn't have that alternative market.

Mr. YATES. When do you expect a full adiabatic diesel to be developed?

Miss FITZPATRICK. We are working on the design phases. We suspect industry will be developing a test cell. The ones we have now are only single cylinder.

METHANOL VEHICLES

Mr. YATES. Let's talk about methanol. How many vehicles are you testing?

Miss FITZPATRICK. Our test fleet, is or very soon will be, about 50 methanol cars located at five different sites around the country matched with identical gasoline vehicles, so we have a control group.

The type of vehicle——

Mr. YATES. Have they been operating long enough so that you can have some comparison?

Miss FITZPATRICK. No, we don't really have a long enough operation period to give you data on it yet.

Mr. YATES. How well does it run?

Miss FITZPATRICK. That is what we are trying to find out.

Mr. YATES. Has anybody driven them?

Miss FITZPATRICK. Oh, yes. There are methanol fueled vehicles running, particularly in California. And they run pretty well.

One of the major questions is, would they run in a harsher climate, because one of the drawbacks of methanol is how it runs in cold climates.

We have our test fleets sited around the country so we can test different climatic conditions.

Mr. YATES. We should know that.

If you run one of these cars in Chicago in the wintertime, you would know the answer to that in a month.

Miss FITZPATRICK. That is true, but what we are looking at is how can you solve the cold start problem, either by reheating or using a different kind of fuel in starting.

Mr. YATES. What is the advantage of such a fuel?

Miss FITZPATRICK. Methanol is a non-petroleum based fuel.

Mr. YATES. You don't have the emissions.

Miss FITZPATRICK. And it also represents improvement in emissions.

Mr. YATES. Do you get more mileage?

Miss FITZPATRICK. It is a high octane fuel. It is not more miles per gallon, because it has a lower fuel value per gallon, so it is not really fair to compare it with gasoline on that basis.

HIGH TEMPERATURE MATERIALS LABORATORY

Mr. YATES. When are you going to complete your high temperature materials?

Miss FITZPATRICK. That is scheduled to be dedicated and ready for use, I believe, next January.

Mr. YATES. Do you have enough money?

Miss FITZPATRICK. Yes, sir.

Mr. YATES. Not only to build it, but to equip it.

Miss FITZPATRICK. Yes, sir, it is fully funded.

Mr. YATES. How will it be staffed?

Miss FITZPATRICK. It will be staffed through funding that will be supplied by the Office of Energy Research. It is also designed as a user facility, so it will have income to cover its cost from industry users.

Mr. YATES. Who is going to control the program, you or Energy Research?

Miss FITZPATRICK. The laboratory is available to all industrial users and to the department, so it is a shared facility.

Mr. YATES. Who decides what experiments go on in the lab?

Miss FITZPATRICK. For the ones that are done by industry, the industry will decide what to do with it, and we will use it for our own purposes, too.

Mr. YATES. Suppose you have a conflict between industry programs and Government programs; is the laboratory going to be large enough to carry all of your programs, or will you have to have some kind of a judicial panel determining which programs you continue to undertake?

Miss FITZPATRICK. I think we would handle it as the department handles all its facilities and try to work to everybody's satisfaction.

Mr. YATES. How does that work?

Miss FITZPATRICK. The department does have a review process, and we do try to work with industry so that we can satisfy everybody's needs.

Mr. YATES. Are universities engaged in your ceramics program?

Miss FITZPATRICK. Yes, sir, they are.

Mr. YATES. Which universities? I have the impression Northwestern is one of these. Am I wrong? Is this work being done in Government labs?

Miss FITZPATRICK. No, it is being done in Government labs and industry labs, and I can supply for the record, if I may, what universities are involved in ceramics.

Mr. YATES. All right.

[The information follows:]

UNIVERSITIES INCLUDED IN CONSERVATION CERAMICS PROGRAMS

The following universities are involved in Conservation ceramics programs:

UNIVERSITY AND AREA

Massachusetts Institute of Technology, Powder Processing Consortium.
University of Washington, Fracture Toughness Measurement.

N.C. A&T University, High Temperature Tensile Tests.
University of Dayton, Toughened Ceramics.
University of Illinois, Static Fatigue of Toughened Ceramics.
University of Tennessee, Coating Adherence.
Virginia Polytechnic Institute, Ultra Low Expansion Ceramics.
Georgia Institute of Technology, Theory for Wear of Ceramics.
Virginia Polytechnic Institute, Near Surface Ceramics Wear.
Northwestern University, Plasma-Assisted Sintering.
University of Washington, Polymer-Modified Suspensions.
Georgia Institute of Technology, Thin-Wall Ceramic Spheres.
Virginia Polytechnic Institute, X-Ray Methods for Near Surface.

Mr. YATES. Do you have enough money in your budget for your ceramics program?

Miss FITZPATRICK. I think it is a very tight budget.

Mr. YATES. That doesn't answer the question.

Miss FITZPATRICK. I think that there is more valuable work that could be done.

Mr. YATES. Is this one of your priority programs?

Miss FITZPATRICK. Yes, it is.

Mr. YATES. You are going to tell us if you need more money for it.

ELECTRIC VEHICLE RESEARCH

Also, how well are electric vehicles progressing? You told us about the battery, and I guess the progress depends on whether the battery works out, doesn't it?

Miss FITZPATRICK. Yes, sir. We think we have a good potential in that sodium/sulfur battery. We are continuing to work on the drive system, so I think the program continues to show good progress.

Mr. YATES. Why do you want to defer your zinc/bromine program for 1986 and then go ahead with it in 1987?

Miss FITZPATRICK. We ran into some problems in the research design on that battery.

The battery tends, when it is recharged, to short itself out, because the electrodes grow back in little fingers instead of in a solid, regularly shaped piece.

And before we can continue with further development we have to solve that problem.

Mr. YATES. Are all the battery systems for which you are deferring money completely available?

Miss FITZPATRICK. The nickel/iron, I think, is ready for integration into a van, and that is being done under the Eaton contract.

We are going to be, continuing to work on the lead/acid batteries, the gell cell and fill battery, and we will continue some work on the zinc/bromine battery, and our big emphasis is on the sodium/sulfur battery.

We will not be continuing with the nickel/cadmium or the iron/air battery. They simply haven't measured up to the potential.

Mr. YATES. What are the problems you have in connection with the electrical vehicle battery? Are there others? Drive shaft or——

Miss FITZPATRICK. No.

Mr. YATES. Nothing else.

Miss FITZPATRICK. No.

Mr. YATES. You are just waiting for the battery?

Miss FITZPATRICK. The battery, I think, is now the key issue.

Mr. **Yates**. How long do you expect it to be before you bring your battery in?

Miss **Fitzpatrick**. The current contract is for three years. It just began for the current fiscal year.

Mr. **Yates**. Is there a chance of that battery being developed before the three-year period is up?

Miss **Fitzpatrick**. I don't think so.

Mr. **Yates**. In other words, you are going to have to renew that contract?

Miss **Fitzpatrick**. We will have to continue it, yes.

Mr. **Yates**. Congress provided for consolidating the electrical vehicle support program at INEL. Shouldn't that be continued?

Miss **Fitzpatrick**. We have done the work intended to be accomplished at INEL, and because we are having a narrowing of our R&D focus, and also at this point we have, basically, no new systems ready for testing, we are going to be phasing out that facility.

Mr. **Yates**. Is there continued interest in electrical vehicles by any major electrical contractors?

Miss **Fitzpatrick**. Yes. General Motors, last fall, began a cooperative program with Detroit Edison and formed the Electric Utilities Development Corporation, and General Motors is manufacturing electric vans in Great Britain.

They imported a number of these to the United States, and they have been distributed around the country and are being run by the utilities as part of their service vehicle fleets.

This will give us good experience with the performance of these vans and it gives the companies the experience with running and maintaining them.

General Motors is obviously very interested in developing this as a market, and those utilities which the group represents, I think, have the generating capacity in the country and are very interested in gaining experience, They see this as a potential market.

Mr. **Yates**. You are phasing out testing at INEL, aren't you?

Miss **Fitzpatrick**. Yes, sir.

Mr. **Yates**. Who else has facilities and personnel to provide equipment testing?

Miss **Fitzpatrick**. I don't think that there is a major facility to do that. There is some battery testing capability at Argonne National Laboratory. As I said, at this point, we don't have systems that need to be tested. We are at kind of a hiatus until we bring on the new sodium/sulfur battery.

GAS MILEAGE GUIDES

Mr. **Yates**. How valuable is the production of mileage guides?

Miss **Fitzpatrick**. The information we have is that the reliance on the mileage guide as a source of information has been falling off.

The mileage information and the comparisons with other vehicle information is provided on the sticker on each car. It is required to be there so the customers don't need to look to another source. So, we had to assign that rather low priority.

Mr. **Yates**. You are going to have to go to about 13 different automobile dealers in order to make the comparison if you don't have the overall guide they can look at in their homes, right?

Miss **Fitzpatrick**. No, that information is now made available by other sources, including "Consumer Report". It is published by EPA and picked up by other sources, and we found a very, very small percentage of new car buyers rely solely on the mileage guide.

Mr. **Yates**. Anybody ever use the annual transportation data book?

Miss **Fitzpatrick**. I know that we have issued it, and we use it.

Mr. **Chiogiogi**. We use it.

Miss **Fitzpatrick**. Yes, sir.

Mr. **Yates**. Are there any other sources?

Miss **Fitzpatrick**. I don't believe in that instance, there are as a compilation.

ADVANCED HEAT TRANSFER RESEARCH

Mr. **Yates**. Why are you terminating advanced heat transfer work?

Miss **Fitzpatrick**. In the industrial programs?

Mr. **Yates**. Yes.

Miss **Fitzpatrick**. Could I ask Mr. Streb to answer that?

Mr. **Yates**. Sure. You don't have the money, obviously.

Mr. **Streb**. Yes, sir, that is one answer.

Mr. **Yates**. What potential applications are there for that?

Mr. **Streb**. Actually, within the programs this was one of the less mature components of the program. The objective was to look for advanced techniques to improve heat transfer coefficients and other heat transfer mechanisms.

The end result of that, of course, would be more efficient heat exchangers and potentially more efficient systems.

LIGHT WEIGHT MATERIALS RESEARCH

Mr. **Yates**. Why are you terminating light weight materials and corrosion resistant materials? You need that work, don't you?

Mr. **Streb**. Once again, it was really a matter of priorities. We felt that there was much more to be gained by applying the funds that were available to other, better defined activities in which the potential was far greater.

There is a considerable materials research program within ECUT that is concentrating on new materials, some of which, of course, have very good corrosion resistance, that have been the primary focus of activity and will be during this coming year.

Both have high temperature characteristics as well as good corrosion resistance.

REVERSE FLOW TESTING FACILITY

Mr. **Yates**. You are completing studies at the reverse flow testing facility. You need no more studies?

Mr. **Streb**. No, sir.

Mr. **Yates**. This is a unique facility, isn't it? You call it a first-of-a-kind facility. If it is that, why are you terminating its use?

Mr. **Streb**. It was, once again, a matter of priorities. The applicability of the information that comes out of that is primarily oriented towards the Stirling engine, and it is consistent with discontinuation of activity on that.

CERAMIC RESEARCH

Mr. **Yates**. If ceramics work is so important, why are you cutting out the funds for ceramics?

Mr. **Streb**. The major thrust in ceramics is actually in the end use programs at this point in time. The program within the transportation materials program, which is $6.5 million, is almost totally dedicated to ceramics.

The activity that is within the Industrial Program towards heat exchangers, which was a million dollars in 1987, is largely oriented towards the materials problem, which is ceramics.

Therefore, the ceramics activity is not being completely discontinued. Implementation is being turned more towards what we call the advanced materials.

Mr. **Yates**. Obviously, the problems you have in materials and tribology have not been solved.

Mr. **Streb**. The problems have not been solved. Tribology continues as a substantially supported effort.

INVENTORS PROGRAM

Mr. **Yates**. Have you completed your competitive program for innovative energy devices?

Mr. **Streb**. Innovation is being supported by the inventors program and will be part of that. I think what you are referring to was a substantiation for ideas that occurred in the past year.

Mr. **Yates**. Yes.

Mr. **Streb**. That program was completed, and there were some studies supported as a result of this.

Mr. **Yates**. Has there been continued interest in the inventions program?

Mr. **Streb**. Very much so.

Mr. **Yates**. Are there a lot of inventions coming on?

Miss **Fitzpatrick**. Yes. There has been some fall off in the number of ideas submitted. We expect only about 1,000 in the coming year. Two or three years ago it was running around 2,000.

We have noticed a decline. We have noticed an increase in the quality of the ideas, to some extent. We still get our share of perpetual motion machines and that sort of thing.

Mr. **Yates**. Have they worked?

Miss **Fitzpatrick**. None of the perpetual motion machines have worked. They work as long as you supply energy to them.

We have found the Energy-Related Inventions Program to be a very useful program. I think that, if nothing else, it is the way that we give people the answer they deserve. Is this idea good? I know many of those ideas come through the Congress, and we are happy to be able to provide a mechanism for dealing with them, and we get good ideas out of it.

Mr. **Yates**. Are you going to fund it at the same level as last year?

Miss **Fitzpatrick**. It is slightly reduced, largely because we know there has been a decline in the number of ideas that have to be evaluated. It was increased, I believe, the year before.

Mr. **Yates**. What about national innovation workshops? Is there any interest in that?

Miss **Fitzpatrick**. Yes. We hold about half a dozen of those regionally around the country. They are planned and hosted by companies and by local units of state economic development offices, the patent attorneys chapters, and universities, and those are very successful.

NATIONAL APPROPRIATE TECHNOLOGY ASSISTANCE SERVICE

Mr. **Yates**. What is your evaluation of NATAS?

Miss **Fitzpatrick**. That has been a good mechanism for providing general information in response to public inquiries.

We are streamlining that, because we found a good many of the inquiries tend to be repetitive. We get the same question many, many times.

So, we are preparing materials that can be returned to the inquirer for those general types of questions. That means we won't have to do an individual letter and redraft individualized answers, so we will be continuing that program.

Mr. **Yates**. Are you going to make any changes in it?

Miss **Fitzpatrick**. Aside from those I have described to make it run more efficiently, we will be doing basically the same job.

Mr. **Yates**. Is the nature of inquiries changing?

Miss **Fitzpatrick**. No, I don't think so.

Mr. **Yates**. Any reason for reducing support this year other than budget constraints?

Miss **Fitzpatrick**. Budget constraints, and we think we can provide the same service more efficiently.

BUILDINGS AND COMMUNITY SYSTEMS

Mr. **Yates**. Building and community systems, you are cutting that slightly, from $38 million to $14 million, right?

Miss **Fitzpatrick**. Yes, sir.

Mr. **Yates**. Why such a reduction?

Miss **Fitzpatrick**. Under our fiscal constraints, what we did was look at that program compared to all the other conservation programs——

Mr. **Yates**. Let the buildings remain drafty, then?

Miss **Fitzpatrick**. No, what we have had it do was make an honest assessment of what contribution building conservation can make to the total energy demand in the country.

Clearly, it is much more difficult to get energy savings out of the building stock, because the turnover is so low.

Only about 2 percent of residential units are replaced each year, and in commercial and other types of units, it is less.

If we are going to make an impact on energy demand, buildings, in general, are not the best target. But within the building sector, there are some very valuable targets, those systems in the building that are easily replaced and can offer significant improvements in energy savings.

So, those systems tend to be in windows and the mechanical heating and cooling systems. That is where we are concentrating our resources.

Mr. YATES. Why are you terminating the building materials work?

Miss FITZPATRICK. Because building materials work, for the most part, could not be implemented except in new buildings, and that is a rather low priority target for actual energy savings.

Mr. YATES. Anybody going to pick up the work that you terminate?

Miss FITZPATRICK. I think there is some continuing interest on the part of those materials manufacturers, some of whom have some pretty good laboratory facilities of their own.

WINDOW TESTING FACILITY

Mr. YATES. In 1985, you completed a test facility for windows, and in 1986 you are going to terminate this activity.

Why the decision to cut it out so quickly?

Miss FITZPATRICK. That is simply based on the priorities scale. It didn't come up to the line.

Mr. YATES. What other testing equipment facilities are you going to terminate?

Miss FITZPATRICK. We are scaling back the equipment that will be available at the test centers.

Mr. YATES. Anybody going to be working on this?

Miss FITZPATRICK. Yes, I think so. We will have a test center. It won't be as extensive as what had originally been designed.

BUILDING ENERGY SOFTWARE

Mr. YATES. You are terminating all work on the building energy performance, DOE-2. How long did it take to develop that system?

Miss FITZPATRICK. That is a computer software package which is available and very useful.

Mr. YATES. Is that being used?

Miss FITZPATRICK. Yes, sir, it is being used. We have had a program of continually updating and trying to fine-tune it. But that is an available software package.

Mr. YATES. Anybody going to maintain and improve the code if you stop supporting it?

Miss FITZPATRICK. I think probably not.

Mr. YATES. Would this be unfortunate?

Miss FITZPATRICK. I think there is something to be gained by it, but it is rather marginal.

BUILDING RETROFIT

Mr. YATES. Are you doing any research in building retrofit?

Miss FITZPATRICK. Yes. Those are the type systems I mentioned. Lighting, windows, and mechanical systems, in particular, are types of systems that can be retrofitted in buildings.

Mr. YATES. You are terminating your work on it.

Miss Fitzpatrick. We had been doing some analytical work and how much actual energy gets saved, which is a matter of some dispute, and we are not planning to continue that work.

BUILDING STANDARD DEMONSTRATIONS

Mr. Yates. What demonstrations are required by law in the standards area?

Miss Fitzpatrick. The law still requires after preliminary building standards are issued that there be a demonstration program with buildings actually being put up that incorporate those standards, and they would be monitored to see what the energy performance in the building is.

I think that that will not be necessary. The reason for that is that we have been working with industry on the present experience with buildings and found consensus standards we think everybody will agree to.

Mr. Yates. Have you issued any standards?

Miss Fitzpatrick. We are in the process. We have issued the commercial standards.

Mr. Yates. Is anything required by law beyond what you propose to do in fiscal year 1987?

Miss Fitzpatrick. Yes, the demonstrations, as I mentioned, are still required by law. We will be issuing at least the preliminary standards, as required.

URBAN CONSORTIUM STUDIES

Mr. Yates. How useful are the studies funded by the urban consortium?

Miss Fitzpatrick. Those studies are the same types of studies that have been going on for some years. We think that the program over the years has been useful. We don't think it is necessary to continue funding them.

I think many of these fall under the same category: the point has been made that conservation is a good investment and that there are many ways of approaching it and have proven to be successful. That information is now generally available.

Mr. Yates. Has the work resulted in significant energy savings?

Miss Fitzpatrick. Some projects have been successful, yes.

Mr. Yates. Have you ever done a formal evaluation of this program?

Miss Fitzpatrick. No, sir. We haven't.

REFRIGERATION SYSTEMS

Mr. Yates. You are canceling all your work on refrigeration systems. Why? Budget again?

Miss Fitzpatrick. Yes, sir. Priorities.

Mr. Yates. Are there potential energy savings in improved refrigeration systems?

Miss Fitzpatrick. Yes, I think there are.

COMBUSTION SYSTEM RESEARCH

Mr. **Yates**. And you are terminating combustion systems research?

Miss **Fitzpatrick**. Yes, sir. We are concentrating on heat pumps.

PULSE COMBUSTION RESEARCH

Mr. **Yates**. What about oil-fired systems, including pulse combustion?

Miss **Fitzpatrick**. No, we are not working on those.

Mr. **Yates**. Petroleum Marketers Association says there is significant research to be done on it. Why don't you do it?

Miss **Fitzpatrick**. We have within the ECUT program, outside the buildings program, a combustion program which does address the issues, including issues involved in the pulse combustion.

Mr. **Yates**. No organized research organization exists to help the petroleum market in developing more efficient equipment.

Miss **Fitzpatrick**. That may be true, yes.

MERCURY ISOTOPE RESEARCH

Mr. **Yates**. What about mercury isotope enrichment? Is all the work that needs to be done done?

Miss **Fitzpatrick**. We have made progress, both in identifying what benefit there can be in enriching or changing the isotope mixture in the mercury gas in fluorescent tubes, and we have made some progress in enrichment separation techniques.

We are going to continue with the work on what is called the enhancement; that is, identifying what benefit there is in changing the isotope mixture.

When we have the results of that, we will know which isotopes we need and which concentrations, and that will be the basis for enrichment techniques.

TECHNOLOGY TRANSFER

Mr. **Yates**. Analysis and technology transfer. Why do you need the same level of IEA support?

Miss **Fitzpatrick**. Those are ongoing commitments we have through International Energy Agency projects.

Mr. **Yates**. Why are you deleting research and utilization activities?

Miss **Fitzpatrick**. That is a form of technology transfer. What we have really done is to integrate those activities into the budget requests for each program area.

Mr. **Yates**. I have the impression you are doubling technology transfer areas and reducing technology-related work in your new budget.

Miss **Fitzpatrick**. It is not our intent to do that, Mr. Chairman. I think what we have done is to consolidate data. We had a number of line items that were technology transfer. There has been some consolidation of those and we have taken some of it and put it into the program areas.

So, I think it may look misleading at first, but that is not what is happening.

APPLIANCE STANDARDS

Mr. **Yates**. All right.

Return to appliance standards. Are you doing any work in this area now?

Miss **Fitzpatrick**. Yes, Mr. Chairman. We have a court order issued last summer which tells us to go back to square one on appliance standards.

We have asked for money in the budget to do that work as required by the court order.

Mr. **Yates**. Are you going to issue revised standards?

Miss **Fitzpatrick**. Yes, we have a plan to issue revised standards. We would be doing all 13 of the standards, some of which have never had anything issued on them.

Mr. **Yates**. When are you going to do them?

Miss **Fitzpatrick**. It is going to take us about two years to do it, because under the court order, we have to go back and gather a great deal of data we did not gather before and also generate new mathematical models for projecting the energy efficiency increases and economic impacts that could be expected.

To do that for all 13 of the appliances and also compare them to foreign appliances, which we are now required to do, and what improvements might be made that have not yet been made in any existing appliance, are going to require considerable time.

Mr. **Regula**. Will the Chairman yield?

Mr. **Yates**. Mr. Regula.

Mr. **Regula**. You mentioned foreign appliances. Do other countries have any comparable programs; and if they were to market in the U.S. economy, would it inhibit them from marketing in the U.S. economy because of the requirement for appliance standards?

Miss **Fitzpatrick**. Mr. Regula, I am informed that other countries do not have appliance standards as proposed here, and I would think the standards would apply to any product marketed in this country, no matter where it was made.

Mr. **Regula**. So, there would be a possibility they might choose not to participate in the U.S. market once the standards are established because of the cost of converting their own production?

Miss **Fitzpatrick**. If their appliances didn't already meet those standards, that would be a possibility.

Mr. **Regula**. Thank you.

Mr. **Yates**. Are there any deadlines for standards you have to meet?

Miss **Fitzpatrick**. No, there are not deadlines, except reasonable compliance with the court order.

APPLIANCE LABELING

Mr. **Yates**. What activities are required by law for test procedures and consumer education in appliances?

Miss **Fitzpatrick**. We cooperate with the Federal Trade Commission on the appliance labeling program, and we are requesting a phase out of the test procedures.

We would continue to cooperate with the FTC on their labeling.

Mr. **Yates**. How much would it cost to continue activities in this area in fiscal year 1987?

Miss FITZPATRICK. It is about $600,000 now, Mr. Chairman.

Let me clarify that. We do have the test procedures already developed for those appliances that the FTC labels. There is an ongoing activity which continues to develop test procedures, and we would propose phasing that out.

Mr. YATES. What is the status of legislation to repeal the requirements?

Miss FITZPATRICK. On the labeling?

Mr. YATES. Yes.

Miss FITZPATRICK. I wasn't aware that there was legislation to be repealed on labeling.

Mr. YATES. There is.

Miss FITZPATRICK. We didn't ask for it.

Mr. YATES. I don't like it either.

Miss FITZPATRICK. I think labeling is a good program.

Mr. YATES. As I remember, Mr. Edwards thought so, too, didn't he?

Miss FITZPATRICK. Mr. Edwards? I never met Dr. Edwards.

Mr. YATES. The Secretary of Energy? He brought a refrigerator off the labeling, and he proposed to do away with the refrigerator the next year.

Miss FITZPATRICK. He already had his refrigerator.

SHARED SAVINGS

Mr. YATES. Last year you testified that legislation was required for agencies to acquire long-term contracting authority for shared savings projects.

Has any legislation been passed on this, do you know?

Miss FITZPATRICK. Yes, there is legislation that has passed the House, I believe, and the Senate, so that should be ready for conference. And I think that would be very, very helpful to Federal agencies.

RESIDENTIAL CONSERVATION SERVICE

Mr. YATES. Good. Residential conservation. What is the status of legislation to revise the Residential Conservation Service.

Miss FITZPATRICK. Bills have passed both the House and Senate and I think are scheduled to go to conference very soon.

Both the bills would repeal the Commercial and Apartment Conservation Service Program, which is just getting under way, and would revise and extend for a limited time—I think, one bill for three years and one for five years—the Residential Conservation Service.

Mr. YATES. Isn't there a continuing role for DOE in some nature of the utility program?

Miss FITZPATRICK. Yes, and we are doing that under the least cost initiative.

Mr. YATES. We will have questions for the record.

Mr. YATES. Mr. Regula.

THIN STRIP CASTING RESEARCH

Mr. REGULA. Thank you, Mr. Chairman.

Last year, one of the highlights of your industrial conservation budget was your proposed work in the area of thin strip casting research.

This year, the program is zero. The original plan called for work on two pre-pilot small phase casting machines during 1986 with selection of preferred process in 1987.

As I read your 1987 budget, you have arbitrarily chosen the winning technology which you will then test and terminate the program.

From a technological standpoint, do you have sufficient information to select which of the two technologies is preferable at this stage?

Mr. STREB. I think you are referring to the program of Bethlehem Steel, and they were pursuing two approaches, both basically found in the same technology.

One approach was referred to as horizontal, the other vertical. I believe by mutual agreement, it was determined that the most probable, successful route was horizontal, and therefore, the program has been oriented to concentrate on that specific approach during this year which resulted in reduction in the fiscal year 1986 dollar requirement.

In addition to that, a determination was made as a result of fiscal constraints that we would pursue that one approach only to the point of conducting a small pilot which does require another $1,600,000 for 1987.

Mr. REGULA. Were Bethlehem and U.S. Steel involved in this, with your decision to choose one over the other?

Mr. STREB. It is my understanding that they were party to the decision to narrow the technology to this one, and that was our approach.

Mr. REGULA. I think that in our conversations, at least with U.S. and Bethlehem, they believe the original program management plan is not relevant to the proposed new non-pilot plant project, and that $4.3 million is required to insure a logical decision point is reached at the end of the pre-pilot phase.

Do you have an opinion on that?

Mr. STREB. Based on the information I have, it is my understanding that we will be able to carry the one approach, a horizontal approach, up to the point of a pre-pilot run, which is a small scale run.

Mr. REGULA. What was the basis for picking horizontal versus the vertical?

Mr. STREB. It was the opinion of the technical experts that it offered the most likely chance of success.

Mr. REGULA. You feel you had sufficient data at this point to make that conclusion?

Mr. STREB. Yes, sir. Also recognizing the fact we are faced with fiscal constraints.

Mr. REGULA. Thank you, Mr. Chairman.

Mr. YATES. Thank you very much.

Miss FITZPATRICK. Thank you.

Mr. STREB. Thank you.

[Questions and answers submitted for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Overall Budget Request

Question: Have your R&D programs been successful?

Answer: DOE's conservation programs, have made important contributions to the Nation's improving energy efficiency. Our research programs have advanced the state-of-the-art in technology development in a number of specific areas shown in Table I. Our information programs have helped consumers make better decisions about the energy using products they buy.

Question: How much energy have they saved to date?

Answer: Attributing specific energy savings to DOE's programs is very difficult. Because DOE's role is one of helping others to save energy, it is not clear how much is attributable to DOE and how much are other technology developments or responses to past price increases by those who actually saved the energy or economic activity. During the ten years from 1973 - 1983 reduction in energy use intensity are estimated to account for more than 20 quads of energy savings in 1984. Only a small percentage of this is directly attributable to DOE programs. Specific technologies developed by DOE should save considerable energy in the future and are estimated to save over 3.1 quadrillion BTUs in 2010.

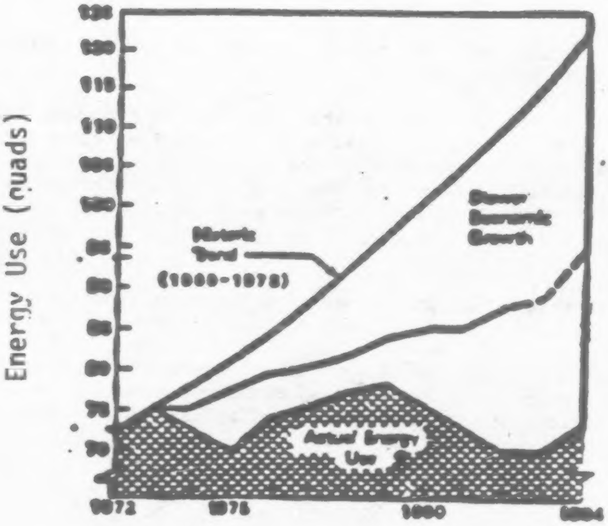
Question: Have you any reason to revise downward the numbers on energy savings provided in last year's hearings?

Answer: Recent declines in petroleum prices may reduce the incentives to conserve energy, but the economy is continuing to implement energy efficiency improvements in response to the price increases of the 1970s. We expect that efficiency improvements will continue but that long term conservation estimates may have to be revised downward if long term energy price projects are decreased.

Question: Do you expect that such programs as you have funded through FY 1986 would continue to result in significant savings if they were continued?

Answer: Programs which have the highest expected paybacks have been continued in the FY87 budget. We believe that these programs will enable us to make significant contributions to future energy efficiency improvements.

Table I



U.S. Energy Trends 1972-1984

Question: If so, why reduce them?

Answer: The need to reduce budget deficits has led to very careful examination of our programs and priorities and only those which provide critical opportunities have been recommended for funding.

Question: Using FY 1986 and prior years as a base, how does government funding of the types of technologies in your budget correspond to that of other major industrial nations?

Answer: Comparisons of Conservation and Renewables R&D funding is difficult because of the general unavailability of comparable data and the different accounting systems that are used. It is clear however that the U.S. supports the largest R&D program as compared to other International Energy Agency members. Comparisons of funding support for individual technology areas is not available but in some cases support in other countries may be greater. No data on total government/industry level of effort is available. Significant differences in measurement approaches exist between countries. Simplistic comparisons on the basis of $/GNP or $/per capita can be misleading. U.S. R&D dollars are carefully targeted where they can get the most benefit and in so far as possible are cost shared with industry. The most recent IEA Conservation and Renewables R&D budget data is shown in the attached table from their Energy Research, Development and Demonstration in the IEA Countries: 1984 Review of National Programmes.

Question: Are those nations decreasing the amount of R&D they support?

Answer: Recent budget data is not available. With the possible exception of the U.K. and Japan, where budget increases appear to be continuing, recent IEA member budgets have either declined or remain approximately the same. Given the caveats raised above, simple aggregate dollar value comparisons may provide misleading information and little real insight.

1984 IEA GOVERNMENT CONSERVATION RD&D EXPENDITURES BY COUNTRY (millions 1984 U.S. dollars)

TECHNOLOGY AREA	AUSTRALIA	CANADA	GERMANY	ITALY	JAPAN	SWEDEN	U.S.
Industrial	1.00	14.63	8.57	8.86	2.12	8.88	48.50
Residential & Commercial	1.64	17.91	4.71	10.05	5.61	11.31	50.50
Transportation	3.35	21.08	0.91	1.99	0.04	2.14	116.70
Other	0.00	5.27	1.30	9.32	3.98	6.27	12.50
TOTAL	5.99	58.89	15.49	30.22	11.75	28.60	228.20

Oversight of State and Local Programs

Question: What legal authorities does the Department have to monitor the use of the Exxon funds?

Answer: The Department believes that the court's order in that case establishes a scheme of restitution in which the Department has an advisory role in contributing to proper implementation of the restitution called for by the court's order.

Question: Must the funds be disbursed in accordance with the Federal regulations governing the programs? If so, how will we know if that is being done?

Answer: The disbursement scheme ordered by the district court differs from that contained in the Department's conservation regulations, under which appropriated funds are distributed piecemeal after approval of individual state plans and presentation of vouchers for expenditures already made by the states. The Department does believe, however, that the court's order authorizes expenditure of Exxon funds by a state for any purpose allowable under the Warner Amendment (section 155 of the Further Continuing Appropriations Act, 1983), including programmatic uses described in implementing regulations that had been adopted at the time of the court's order of February 26, 1986.

To insure that the states understood the restitutionary purposes for which the funds were to be made available to them, the Department sought and obtained written confirmation from the Governors of all the eligible jurisdictions that they understood the limitations on the use of the funds and agreed to abide by those limitations. No Exxon funds were disbursed to any jurisdiction until that statement of assurance was received by the Department. In addition, the Department will receive and review the annual reports from each jurisdiction and will report to and advise the Court on the expenditures.

Question: Have you received any correspondence from the court with regard to monitoring in the Exxon case? If so, what is the nature of the correspondence?

Answer: The Department received a letter dated March 4, 1986 from the district court judge who heard and decided this case. Attached is a copy of that letter, together with a copy of the Department's responses of March 31, 1986 and April 7, 1986.

The Secretary of Energy
Washington, DC 20585

March 31, 1986

Honorable Thomas A. Flannery
Judge of the United States District
Court for the District of Columbia
Washington, D.C. 20001

Dear Judge Flannery:

On March 4, 1986, you wrote me concerning the distribution of overcharge funds collected pursuant to your order in *United States v. Exxon Corporation*, Civil Action No. 78-1035. In your letter you referred to a February 26, 1986, letter to you from Congressman John D. Dingell, Chairman of the Subcommittee on Oversight and Investigations of the House Committee on Energy and Commerce.

As you noted in your letter, "Mr. Dingell seems to think that without closer monitoring, abuses will take place and restitution will be thwarted." Mr. Dingell suggests that the Department's interpretation and implementation of your order are inadequate to effect restitution. We respectfully disagree.

It is true that the Department does not propose to "monitor" the Exxon distributions in exactly the same way as it does distributions of appropriated funds under the Department's regulations. Under the conservation regulations, the Department distributes the appropriated funds piecemeal to the states for Department-approved state plans. We believe that your order sets up a different scheme to effect restitution, a scheme in which the Department has an advisory role with respect both to the states and the Court and in which the chief elected officers of the jurisdictions are made directly responsible for carrying out your order.

To insure that the states understood the restitutionary purposes for which the funds were to be made available to them, the Department sought and obtained written confirmation from the Governors of all the eligible jurisdictions that they understood the limitations on the use of the funds and agreed to abide by those limitations. No *Exxon* funds were disbursed to any jurisdiction until that statement of assurance was received by the Department.

In addition, the Department is prepared to advise the states as to the appropriate uses of the funds under your order. We believe that your order authorizes expenditure of the *Exxon* funds by a state for any purpose allowable under the Warner Amendment, including all uses described in the statutes and implementing regulations that had been adopted at the time of your order of February 26, 1986. Attached is a list of all such uses. In addition, the Department will receive and review the annual reports from each jurisdiction and will report to and advise the Court on the expenditures.

The Department believes that the terms of your order are sufficiently comprehensive to effect restitution. The Governors have given every indication in the specific, unambiguous language of their statements of assurance that they intend to comply with the requirements of your order.

As I hope you agree, the Department is implementing your order to fulfill the restitutionary objectives that it manifestly is crafted to assure.

Yours truly,

John S. Herrington

John S. Herrington

Enclosure
List of restitutionary programs

cc: Honorable John D. Dingell
Chairman, Subcommittee on Oversight and Investigations
Committee on Energy and Commerce

Honorable James A. McClure
Chairman, Committee on Energy and Natural Resources

WEATHERIZATION ASSISTANCE PROGRAM

PERMITTED STATE ACTIVITIES

I. Program Administration

Ten percent of the grant amount, at least half of which must be passed through to subgrantees.

II. Weatherization Materials

Includes caulk and weatherstrip, insulation, furnace efficiency modifications, and other mechanical/architectural devices designed to reduce energy use and repair materials necessary to make the installation of weatherization materials effective.

III. Program Support

Includes labor, supervisors, vehicles, warehouse/storage space and associated personnel and other reasonable costs necessary to install materials in eligible dwellings.

IV. Technical Assistance

Includes monitoring of and training and technical assistance in all facets of the program.

V. Liability Insurance

VI. Low-Cost/Now-Cost Weatherization Activities

Includes energy saving materials with a cumulative value of less than $50/home.

INSTITUTIONAL CONSERVATION PROGRAM

Permitted State Activities

I. Program Administration

- Up to 5 percent of total amount of grants awarded within the State during the grant cycle, to be matched 50/50 by State funds.

II. Program Measures

- Technical assistance analyses specialized studies to identify and specify energy savings and related cost savings that are likely to be realized as a result of modifying maintenance and operating procedures in a building, acquiring and installing one or more specified energy conservation measures in a building, or both.

- Energy conservation measures, including but not limited to
  - Insulation of the building structure and systems within the building;
  - Storm windows and doors, multiglazed windows and doors, heat absorbing or heat reflective glazed and coated windows and door systems, additional glazing, reductions in glass area, and other window and door systems modifications;
  - Automatic energy control systems which would reduce energy consumption;
  - Equipment required to operate variable steam, hydraulic, and ventilating systems adjusted by automatic energy control systems;
  - Active or passive solar space heating or cooling systems, solar electric generating systems, or combination thereof;
  - Active or passive solar water heating systems;
  - Furnace or utility plant and distribution system modifications including:

    (1) Replacement burners, furnaces, boilers, or any combination thereof, which substantially increase the energy efficiency of the heating system;

(2) Devices for modifying flue openings which will increase the energy efficiency of the heating system;

(3) Electrical or mechanical furnace ignition systems which replace standing gas pilot lights; and

(4) Utility plant system conversion measures including conversion of existing oil and gas-fired boiler installations to alternative energy sources, including coal;

•• Addition of caulking and weatherstripping;

•• Replacement or modification of lighting fixtures to increase the energy efficiency of the lighting system without increasing the overall illumination of a facility, unless such increase in illumination is necessary to conform to any applicable State or local building code or, if no such code applies, the increase is considered appropriate by the Secretary;

•• Energy recovery systems;

•• Cogeneration systems which produce steam or forms of energy such as heat, as well as electricity for use primarily within a building or a complex of buildings owned by an eligible institution and which meet such fuel efficiency requirements as the Secretary may by rule prescribe;

•• Such other measures as the Secretary identifies by rule for purposes of this part, as set forth in Subpart D of 10 CFR Part 450; and

•• Such other measures as a grant application shows will save a substantial amount of energy and are identified in an energy audit in accordance with § 455.19, its equivalent, an energy use evaluation, or a technical assistance report.

Several typical projects in the ICP programs are highlighted below:

- ICP funds have supplemented Ohio State University's energy conservation efforts, which save the university approximately $5.5 million per year. University officials believe that without their energy conservation program tuition costs for each student would be about $100 per year higher. ICP has funded projects in 15 campus buildings since 1980.

- A Nevada high school installed the second of three evaporative coolers. The energy-efficient system, which saved over $28,000 in energy costs during its first year of operation, received a Special Award in the Department of Energy's 1985 technology-transfer competition, and was funded in part by an ICP grant.

- ICP funds have supplemented the Washington, D.C., Children's Hospital energy conservation efforts through the installation of pneumatic controls which are projected to save the hospital more than $100,000 per year.

- Cooper Green Hospital in Birmingham, Alabama, used an ICP grant as seed money to leverage an additional $377,000 of private financing which, combined, saved 2-3 times the energy ICP dollars alone could have achieved.

- A primary school in Londonderry, Vermont, converted its's boiler to a dual wood-oil system. This was installed at a cost of $50,000 and will save approximately $10,000 of the schools annual heating cost (payback of less than 5 years).

Permitted Activities under the State Energy Conservation Programs and the Energy Extension Service

The program rule for the State Energy Conservation Program (SECP) (10 CFR 420.12) states that the purpose of the program is to; "...promote the conservation of energy and reduce the rate of growth of energy demand through the development and implementation of comprehensive state energy plans". The states are required by the enabling legislation to include in their comprehensive plans and programs five mandatory measures as follows:

(1) Right-turn-on-red
(2) Program measure to promote car pooling and van pooling
(3) Energy efficiency standards to be followed in state procurement practices.
(4) Thermal efficiency standards for new and renovated building
(5) Lighting efficiency standards for all buildings

In addition, the states are encouraged to develop and maintain other discretionary programs that will increase energy efficiency within the states. The states have great flexibility concerning discretionary measures as long as their programs do not fall under "prohibited expenditures" as follows:

"(a) No financial assistance provided to states under this part shall be used-

(1) For construction, such as construction of mass transit systems and exclusive bus lanes, or for construction or repair of buildings or structures;

(2) To purchase land, a building or structure or any interest therein;

(3) To subsidize fares for public transportation;

(4) To subsidize utility rate demonstrations or state tax credits for energy conservation;

(5) To conduct or purchase equipment to conduct research, development or demonstration of conservation techniques and technologies not commercially available; or

(6) To purchase or install equipment or materials for energy conservation building retrofits or weatherization.

(b) No more than 20 percent of the financial assistance awarded to the state for this program shall be used to purchase office supplies, library materials, or other equipment whose purchase is not otherwise prohibited by this section.

(c) Demonstrations of commercially available conservation techniques and technologies are permitted, and are not subject to prohibitions of 465.11(a) (1) and (6) or to the limitation on equipment purchases of 465.11(b)

(d) A State may use regular of revolving loan mechanisms to fund services which are consistent with this part and which are included in the state's approved Plan. The State may use loan repayments and any interest on the loan funds only for activities which are consistent with this part and which are included in the state's approved Plan."

Similarity the EES regulation 10 CFR 465.11 directs the states to:

(a) "Establish a positive outreach program directed toward small business and individual energy users..."

(b) "Stimulate, provide for and supplement program for the conduct of evaluation, planning and the other technical assistant of energy conservation efforts including outreach activities."

Again, the states are provided great flexibility as long as they adhere to the same "prohibited expenditures" cited under the SECP, above.

In summary, the states are provided the flexibility of developing and maintaining a wide range of energy conservation programs to meet the diversity of conditions and local needs and opportunities found in each state. And, indeed, there is great diversity and it is not possible to provide a definite statement of all programs without a major effort of analysis, segmentation and compilation. However, the following projects/programs provide an illustration of state SECP/EES programs carried out in 1985 and are indicative of the types of programs/projects that the states could carry out as long as they adhere to the "prohibited expenditure" rules cited above.

- The North Carolina Energy Division contracted with private engineering firms to provide detailed engineering analysis to 18 municipal water and wastewater treatment facilities to identify energy conservation potential in operating/maintenance procedures, low-cost improvements and high capital cost modifications. Studies have shown that most municipalities spend 30-35 percent of their energy dollars on utilities, including water/wastewater facilities. Engineering analyses completed on the first twelve (12) facilities indicate a very positive potential for energy savings, in the range of 14 percent to 35 percent of the plant's annual energy bill, depending on the implementation of recommended energy conservation measures. With the completion of these analyses, the Energy Division contracted for the development of case studies utilizing the results of the audits. The final step in this program was the development of a workbook incorporating both a "how-to" audit and the case studies. A series of workshops was conducted using the workbook and was targeted to system operators and plant operating personnel.

- The state of Kentucky has designed a Local Government Energy Management Program aimed at lessening the burden of energy costs on tight local government budgets. Under this program, a position of energy coordinator was offered to local governments on a competitive basis for a twelve-month period. Following the twelve-month period, each local unit of government must decide whether to continue the position or not. Funds for the position are then expected to be obtained by the local government from cost savings accrued during the initial twelve month period. This would be achieved from the various energy conserving projects recommended by the coordinator and implemented by the local government. By expanding the program to include the private sector, the local government may also provide to local businesses the opportunity to receive assistance from the coordinator in terms of offering advice on energy Conservation programs they can use to save money and energy in their businesses. In turn, the local government may receive from the business community financial support for the position's continuation.

- The Mississippi Department of Energy and Transportation developed a comprehensive Transportation Management Program which is being utilized statewide in public school districts. Working with the State Department of Education and institutions of higher learning, the primary objective is to provide school administrators with organizational and procedural strategies for implementing an effective energy management program. Regional administrator workshops are conducted to emphasize the economic advantages of implementing the services available through the Department which include: (1) Computerized bus routes and schedules, Computerized operational and maintenance cost control reporting/recordkeeping, and (3) Driver training workshops which emphasize improved efficiency and safety through modification and improvement of driving habits. An administrator handbook, driver training manual, and other materials were distributed statewide.

- The Alabama Energy Division in the Department of Economic and Community Affairs has an active energy education program aimed at making the citizens of Alabama aware of the nature and importance of energy, energy alternatives, and energy conservation. A major effort was to develop energy education software for use in elementary and secondary schools. By blending the skills of energy engineers, computer scientists, and progressive public school teachers, this unified effort helped ensure that the energy facts presented not only informed the students but helped ensure that the energy facts presented not only informed the students but helped develop better math and science comprehension.

Department of Energy
Washington, DC 20585

April 7, 1986

Honorable Thomas A. Flannery
Judge of the United States District
Court for the District of Columbia
Washington, D. C. 20001

Dear Judge Flannery:

On March 31, 1986, Secretary Herrington responded to your letter of March 4, 1986, in which you solicited the Department's views on matters raised by Chairman John Dingell.

Attached to Secretary Herrington's letter were descriptions of the state activities authorized by the various DOE conservation programs that may be the recipients of overcharge funds disbursed to the states, territories and possessions of the United States as a result of your decision and orders in United States v. Exxon Corporation, Civil Action No. 78-1035. These descriptions included references to the permissible use of portions of federal appropriated funds for administrative expenses associated with the programs. Upon reflection, we are concerned that the references to permissible uses of federal appropriated funds for administrative expenses may inadvertently mislead the court as to the Department's position concerning the proscription against use of the Exxon overcharge funds for such purposes.

The Department wishes to make clear its view that, absent modification by you, we believe that your decision and orders prohibit use of Exxon funds for administrative expenses.

Sincerely,

Carl A. Corrallo
Solicitor
Economic Regulatory Administration

cc: Honorable John D. Dingell
Chairman, Subcommittee on Oversight and Investigations
Committee on Energy and Commerce

Honorable James A. McClure
Chairman, Committee on Energy and Natural Resources

Question: What do you do now in order to monitor funds provided by Congressional appropriations?

Answer: Grantee monitoring is the responsibility of both DOE (headquarters and field offices) and state agencies which operate the programs in their respective jurisdictions.

In the monitoring of the state grantees, the DOE field offices assess the adequacy of State financial tracking systems and review the administrative and programmatic activities of the State agencies. This is achieved through visits to the State, through regular telephone contact, and the review of periodic reports submitted by the State to the DOE field office.

The monitoring of Institutional Conservation Program technical assistance grantees and Weatherization Assistance Programs subgrantees, is primarily the responsibility of the states. The results of those monitoring visits are then reported to the DOE field offices and OSLAP headquarters. In addition, the DOE field offices monitor a specific sample of WAP subgrantees as well as ICP Institutional grantees, with on-site visits. Review of state activities is conducted by DOE through monitoring visits to determine the accuracy of progress reports, the quality of project implementation, and to determine the extent of compliance with federal regulations by the grant recipients.

Question: What kind of effort does that take in manpower and dollars?

Answer: In FY 85 an estimated 35% of OSLAP staff time costing an estimated expenditure of $3.5 million was required to provide monitoring of appropriated funds. In addition, DOE headquarters disbursed $2,841,877 to the field offices for contractor performed monitoring, technical assistance, and information exchange in FY 85.

Question: Would the same magnitude of effort be needed to monitor the Exxon funds or would it be greater?

Answer: The Exxon funds have been disbursed under court order directly to the States and the Department has obtained from the Governor of each State an acknowledgement, in writing, of the limitations on the use of the funds and an agreement to abide by the direction of the Court. The Department of Energy is providing guidance to the States on appropriate uses and will review the annual reports which the Court has directed the States to submit. The Department will report to the Court on the use of the funds. This activity will require less effort.

Question: If you were directed to monitor the expenditure of Exxon funds, how would you go about it?

Answer: The Department does plan to monitor the expenditure of the Exxon funds, consistent with the court order, in the manner described above.

Question: The Exxon decision does not allow the use of funds for "administrative expenses." What is the proportion of the funds you provide to the States for each of these programs that they use for such expenses?

Answer: The percentage varies from program to program. For WAP, administrative expenses are limited to no more than 10% of a state's allocation, with 5% passed through to the local agencies. Under ICP a state may use up to 5% of its allocation for administrative expenses; the state must also match their grants for administrative expenses. No limit is placed on administrative expenses under SECP and EES. For those programs, many times, indirect costs and cost rates are interpreted as administrative costs for a given state. As a result not all states define "administrative" expenses in the same way.

Question: If there are no federal funds provided for these programs in FY 1987, will the States have to find additional State funds to pay for the administration of these programs?

Answer: Currently, about $13.5 million of state grant program administrative expenses are paid for annually with federal grant funds. The states would need to replace the federal share. They could do so by utilizing state funds that might otherwise be used for direct program costs or by seeking additional state appropriations.

State and Local Programs - General

Question: With regard to state and local programs, it has been said that the Department is going to seek a rescission of FY 1986 funds. Is that correct?

Answer: A number of rescission requests have been under consideration. At this time, no rescissions have been approved for the State and Local Program funds.

Question: At what stage in the process of disbursement are the funds for each of your State and local programs?

Answer: All grant program funds have been disbursed to the DOE field offices. As of March 31, FY 1986 grants have been awarded to the States as follows: the State Energy Conservation Program/Energy Extension Service (SECP/EES), 12 awards; Institutional Conservation Program (ICP), 12 awards; and Weatherization Assistance Program (WAP), 49 awards. All remaining grants are scheduled to be awarded by SECP/EES before August, and by ICP and WAP before April 30.

Question: Have any funds already been obligated?

Answer: Grant funds totaling $172.8 million have been obligated by State and Local Assistance Programs as follows:

SECP/EES..............................	$ 4.9 million

ICP	12.9 million
WAP	155.0 million

Question: Please explain what residual functions you intend to carry out in FY 1987 and beyond if no direct funds are provided for state grant programs. What areas of expertise do you have in this program which can be of continuing help to the states? Do you intend to maintain capability in those areas?

Answer: In FY 87, the Department intends to work with the states and assist them in finding alternate sources of funding for energy conservation activities. In both the Weatherization Assistance Program and the Institutional Conservation Program, there are ongoing demonstration programs which will provide information on the ways in which alternative financing arrangements can be used to support energy conservation projects in those client sectors. OSLAP will also continue to provide training and technical assistance to states in the planning and implementation of energy efficiency programs.

Question: Do you intend to keep some type of information or data exchange mechanisms in place after direct grants are completed?

Answer: This is a decision that will be determined in FY 87 in view of other information exchanges taking place outside the department.

Question: In FY 1986 you were to aggressively pursue methods of assisting the States in developing plans to obtain more private assistance for these programs. What do you expect to accomplish in each of the program areas?

Answer: Institutional Conservation Program

In order to provide a more balanced mix of Federal, State, local and private sector assistance to, and investment in, institutional energy efficiency, efforts have been undertaken in the Institutional Conservation Program (ICP) to identify institutional needs and to develop methods for addressing those needs through enhanced non-federal involvement. The ICP multi-year strategy developed during 1985 addresses the three most important energy-related needs identified by institutional building sector groups as financing, information, and expertise. This strategy will be carried out at the State and national level. In order to help States develop programs to assist institutions to access alternative sources of financing, energy conservation and share energy management information, and expertise, ICP has chosen to serve as a catalyst by providing seed money to State energy offices. By means of a competitive solicitation, the ICP will award seven to twelve one-year grants to state energy offices in FY 1986 to conduct innovative developmental projects in the areas of technology transfer and financial counseling, networking with associations, and capital pooling projects which will address the major needs of the institutional building sector as identified above.

As a further planned activity and in order to complement the activities being conducted by States through the awards described above, three regional strategy forums are planned at the national program level, with non-federal co-sponsorship, which will focus on providing products and services such as energy management and financing case studies, energy management strategy planning, and data on successful energy efficiency programs and projects. Participants for these forums will be drawn from State and Local governments, associations, utilities, financial institutions, and energy service companies. The forums, in addition to complementing the activities to be conducted by the States by means of the one-year grant awards, will begin the process of building energy conservation partnerships among participants, especially at the non-federal levels. Also, through the involvement of Federal and State energy office personnel, as well as representatives of the professional associations and institutional administrators, information and training materials on the use and types of alternative financing arrangements, energy planning strategies, and techniques for making sound energy efficiency decisions will be made available to institutional clients by a variety of network and technology transfer mechanisms. Efforts will be made to design the training materials for replication so that the transfer of knowledge to States and public sector entities can be economically achieved.

Weatherization Assistance Program

In 1986, the Department awarded 38 program opportunity grants to States and local weatherization agencies to promote energy-related business development activities by local agencies. The proceeds of these ventures will ultimately be used to provide additional weatherization services to the eligible population. Additionally, DOE will distribute to States copies of "How To" manuals developed on four projects funded by the Department to demonstrate innovative financing strategies for weatherizing low income multifamily buildings.

State Energy Conservation Program/Energy Extension Service

During FY 86 the SECP/EES program activities are focused on transferring, among the States, examples of State projects which make use of partnerships among state and local governmental agencies and the private sector to leverage resources for energy conservation activities. We expect States to implement these highly leveraged programs within their States.

Question: What funds are you expending in FY 1986 for this purpose?

Answer: Institutional Conservation Program

During FY 1986, the Institutional Conservation Program (ICP) expects to expend approximately $2.0 million for the State/Local developmental grant awards and approximately $575K for the other activities planned at the national Institutional Conservation Program level for a total of $2,575,000.00.

Weatherization Assistance Program

The Program Opportunity Grants, awarded in January 1986, totalled $2.1 million. Preparation of The "How To" Innovative Financing manuals will cost approximately $35,000.

State Energy Conservation Program/Energy Extension Service

In the SECP/EES program we plan to expend about $224,000 for regional technical assistance activities to support the transfer of these projects among the States.

Question: What do you propose to do in FY 1987?

Answer: Institutional Conservation Program

During FY 1987, the Institutional Conservation Program (ICP) will continue to work with States and other non-Federal partners to advance the goal stated above. In this vein, FY 1987 program efforts will be directed toward: monitoring state developmental projects; continuing to work with associations and other non-federal entities to develop on-going energy efficiency programs for institutions; and transforming concepts and knowledge gained from program experience and demonstration projects in alternate financing methods and energy management techniques and planning. The ICP national evaluation currently underway will be completed and will provide valuable information to the institutional sector with respect to energy savings, successful conservation measures, and the activities conducted by institutions which contributed to successful results and will identify key technology transfer opportunities.

Weatherization Assistance Program

DOE will continue to support energy-related business development activities and make available to States as many transition tools as possible.

State Energy Conservation Program/Energy Extension Service

In FY 1987 we propose to assure the orderly close-out of the grants which were awarded to the States during FY 1986. This includes the monitoring of the State projects to insure that the funds are being used for the purposes of the grant awards.

Question: The Committee is concerned that after oil overcharge funds are expended no funds will be available from other sources for low income weatherization of single family homes. Are you aware of any viable sources, outside of direct State or Federal appropriations?

Answer: In addition to direct State and Federal appropriations, a number of utilities across the country provide weatherization services for low income single family homes.

Question: What percentage of weatherization funds go to single family homes?

Answer: Approximately 80% of current DOE weatherization funding goes to single family homes.

Question: Is there a residual need to provide training to State personnel and these program areas?

Answer: Primary responsibility for expanding State and local energy efficiency capability and providing local conservation services belongs, most appropriately, to the States and local governments. Our goal has been to enable those levels of government to develop and maintain their own programs without Federal funds. As a result of these efforts, State and local governments are equipped with training and experience gained in ten years of Federal support. We believe their capabilities to plan and implement programs and alternative funding sources are now developed to the level at which annual Federal financial aid may be discontinued.

Question: What are you doing in that regard in FY 1987?

Answer: We believe that the capacity of States and local governments to develop and manage their own programs has reached the point where further Federal training efforts are no longer needed. We have, therefore, requested no FY 1987 appropriations for this purpose.

Question: What have you done in the past?

Answer: We have identified training needs through a variety of mechanisms, e.g., program monitoring, evaluation studies, needs assessments, solicitation of State and local suggestions. Once identified we have addressed these needs through a variety of activities including: conferences, focused workshops, printed training materials, audio-visuals, on-site assistance, and peer exchange.

In recent years, all programs have been working with State agencies to develop non-Federal sources of support. Efforts in this area have included: innovative financing demonstration projects; program opportunity grants to promote energy-related business development opportunities; documentation of the above and other innovative approaches and networking of same; and workshops.

Radon Exposure

Question: A recent TV news series in Washington has brought the exposure to radon gas in homes to the public's attention. DOE, mainly through its work at Lawrence Berkeley Laboratory in California, has been working with indoor air pollution problems for a long time. How much of a contribution does making your home "airtight" through conservation measures make to increasing radon levels?

Answer: Energy conservation measures which solely reduce ventilation rates may increase indoor radon levels somewhat. The usual retrofit energy conservation measures to improve air-tightness — caulking, weather-stripping, and the use of storm windows and storm doors — will generally increase the tightness of a home by no more than 20 percent. DOE/CE research has demonstrated that these measures do not cause a large increase in indoor radon levels. However, at the same time as such energy conservation measures are undertaken, DOE recommends providing controlled mechanical ventilation when necessary to maintain low indoor radon levels.

The primary determinants of indoor radon levels are the radium content of the soil surrounding a house, the permeability of the soil and the type of building construction, i.e., residences with basement, crawl space, or slab-on-grade designs. Nevertheless, since energy conservation measures may have an effect, however small, on indoor radon concentrations, DOE believes there is a need to quantify this level of risk.

Question: What are the best ways to reduce radon concentrations indoors?

Answer: DOE/CE is currently conducting research to identify and evaluate different control and mitigation strategies to reduce indoor radon concentrations. This research is evaluating both source control techniques to prevent radon entry and ventilation strategies to reduce indoor radon levels. Although source control is the preferred technique whenever feasible, in some instances, increased ventilation is the easiest and most cost effective mitigation approach. Therefore, DOE/CE in close coordination with the Bonneville Power Administration and EPA, is conducting research on both approaches.

DOE/CE research is studying the following mitigation strategies: sealing of cracks and holes in substructure surfaces: house ventilation with heat recovery; sub-surface ventilation; overpressurization of the basement; and crawl space sealing and ventilation. Preliminary results indicate that all of those techniques, properly applied, are capable of reducing indoor radon levels. Basement pressurization may be a low-cost solution in homes with tight, closable basements, but may be easily defeated through occupant interference. Subsurface depressurization is labor intensive and may require special blowers; yet it may provide an effective and reliable long-term solution. Subsurface pressurization was more effective than identical depressurization systems, but may be suitable for only certain soil conditions. Crawl space ventilation is still an essential method of control in homes with crawl spaces, but may not entirely eliminate radon in homes that also have basements. Ventilation with air-to-air heat exchangers appears to be effective in homes with low initial ventilation rates or low initial radon concentrations. Finally, sealing cracks and holes between the soil and the basement has been shown to be generally ineffective since all such leaks cannot be eliminated.

Question: What is your opinion of the hazard level in the Washington area, based on the study done by the news media?

Answer: The recent survey of indoor radon levels in the Washington, D.C. area done by local news media included measurements in 50 homes. Indoor radon levels in living areas ranged from 0.4 to 17.3 picoCuries per liter (pCi/l), and averaged 3.3 pCi/l. Measured levels in basements ranged from 0.7 to 32.5 pCi/l, and averaged 6.4 pCi/l. These levels represent averages for measurements taken in both summer and winter. The Winter levels were considerably higher than those measured in the summer. While it is premature to offer a conclusive opinion on the hazard level this limited, non-statistically chosen sample implies for the Washington area, the survey results would seem to suggest that indoor radon levels in the D.C. area are somewhat higher than the estimated national average (1.5 pCi/l), and significantly lower than the average levels being measured in areas such as the Reading Prong.

Question: Where are other major areas of concern in the country?

Answer: Although data on indoor radon levels are increasing rapidly (this year BPA will provide 35,000 radon measurements in the pacific Northwest alone), the existing available data on indoor radon levels preclude the assessment of major areas of concern with the exception of the region referred to as the Reading Prong. The Reading Prong is a geological formation rich in radium which extends from Pennsylvania through New Jersey to New York State. Measurements performed by the State of Pennsylvania and EPA indicate that many of the houses in this region have indoor radon concentrations higher (sometimes much higher) than the estimated national average.

DOE/CE in cooperation with EPA, is conducting research to develop a predictive capability to identify areas with the potential for high (or low) indoor radon levels. This research is using National Uranium Resource Evaluation Survey (NURES) data collected by DOE and soil characterization maps prepared by USDA to overlay regions of unusually high surficial radium concentration and soil permeability, factors which are believed to contribute to high indoor radon levels.

Question: Is there an organized survey being considered?

Answer: The EPA Office of Radiation Programs is planning a national survey of indoor radon concentrations. This survey is being designed during FY 1986, and field sampling will begin in FY 1987. The primary objective of the survey will be to determine a statistically valid estimate of the frequency distribution of indoor radon levels in U.S. single family houses. A second objective of the national radon survey will be to identify regions of higher than average indoor radon levels, and to compare these regions with predictive techniques currently being developed. This will be accomplished by oversampling in areas suspected from geological and soil data to have higher than average indoor radon levels.

Question: Would you have any responsibility in this area?

Answer: DOE staff and researchers are cooperating with EPA in the design of the national survey for indoor radon. This involvement has included attendance at the EPA "Workshop on Objectives and Measurement Procedures for a

National Assessment of Indoor Radon Levels" held September 18 and 19, 1985, in Montgomery, Alabama. Although DOE will participate in the quality assurance/quality control program for the national survey, DOE will not be conducting the survey.

Question: What specific work are you doing in this are?

Answer: DOE/CE research on indoor radon includes (1) studying soil characteristics and their influence on radon entry; (2) identifying predominant radon entry sites into buildings; (3) studying radon progeny behavior within buildings; and (4) participating in collaborative efforts to determine a geographical distribution of radon concentrations across the United States. Cooperative efforts with EPA include conducting intensive indoor radon research in approximately ten test homes. This detailed research effort extends from characterizing the concentration of radium in the soil surrounding these homes to evaluating the effectiveness of energy efficient radon control techniques. The goal of DOE/CE's research program in indoor radon is to provide the information necessary to develop a capability to predict indoor radon concentrations in both existing and planned residences. In addition, the program will seek to develop energy efficient designs and retrofit techniques so that all houses will have low indoor radon levels. The results of this research will continue to be distributed primarily in the form of technical publications and reports. Examples of FY 1986 publications will include reports on the "Factors Affecting Soil as a Source of Indoor Radon" and "Radon and Remedial Action in Spokane River Valley Residences." These reports provide DOE/CE input into the publications of others, e.g., EPA's "Radon Reduction Approaches for Your Home - Interim Guidance."

Question: What are the other major indoor pollutants?

Answer: In addition to radon, other indoor pollutants of concern include: formaldehyde, organic compounds, combustion products (nitrogen oxides, carbon monoxide, and particulate matter), allergens and pathogens, and asbestos. With the exception of asbestos (which has its own Federal task force), research devoted to each of these indoor pollutants is coordinated by one of the working groups of the interagency Committee on Indoor Air Quality (CIAQ).

Question: Are you working on methods to control them?

Answer: One of the key components of DOE/CE's research program in indoor air quality, infiltration, and ventilation is research devoted to indoor air quality control techniques. The goal of this research effort is to develop, test, and model energy efficient trechniques to control indoor pollutant levels. This research includes studying ventilation processes in residences and large buildings, evaluating techniques to reduce pollutant source strengths, and examining pollutant-specific removal processes.

Major accomplishments from DOE/CE research on indoor air quality control techniques include: (1) laboratory and field testing and computer modelling of air-to-air heat exchangers; (2) laboratory testing and modelling of techniques for removing formaldehyde, radon progeny, and particles from indoor air; and (3) the development of experimental methods for measuring ventilation rates, outside air distribution patterns, and ventilation effectiveness in large buildings. The results of this reesearch, as well as an overview of indoor air quality control techniques, is provided in the publication, "Indoor Air Quality Control Techniques: A Critical Review" (Lawrence Berkeley Laboratory Report #LBL-16493). FY 1986 and 1987 research will address: (1) laboratory testing and computer modelling of the performance of air-to-water heat pumps for residential ventilation; (2) collaborative evaluations (with BPA and EPA) of residential radon control measures; and (3) the development of a multitracer gas experimental system to measure the rates, distribution, and effectiveness of ventilation in large buildings. FY 1986 publications will include technical reports on "Laboratory Evaluation of Exhaust Ventilation with Heat Recovery" and "Field Studies of Ventilation Efficiency in Office Buildings."

Question: Your budget addresses establishing "voluntary consensus standards" for indoor air quality. Your key activities show this happening over three fiscal years but not being completed. When will such standards be set?

Answer: FY 1986 and 1987 planned activities devoted to continuing "collaborative efforts to develop voluntary consensus standards for indoor air quality" address DOE/CE input to the standards/guidelines activities of others, e.g., industry gorups and State and local governments. DOE/CE's contribution in the voluntary consensus process is to conduct fundamental research which provides information to others.

The American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) is nearing completion on a revision to its Standard 62-1981 "Ventilation for Acceptable Indoor Air Quality." The objective of this voluntary industry consensus standard is "to provide healthful and comfortable indoor environments by using materials and methods that optimize efficiency of energy utilization." If consensus can be achieved at the next 62-1981R committee meeting (R stands for revision), the revised standard could be out for public comment this summer.

Question: To whom will they apply?

Answer: ASHRAE Standard 62-1981R, as with all ASHRAE standards, is being established to assist industry and the public. The creation of ASHRAE standards is determined by the need for them, and conformance to them is completely voluntary.

Question: What will be the effect of the standards?

Answer: If the revised standard accomplishes its objective, its effect will be to provide industry and the public with a uniform procedure to specify minimum ventilation rates and indoor air quality which are intended to be acceptable to human occupants and will not impair health.

Question: In an area that has such a large effect on human health, how can standards remain "voluntary"?

Answer: Since all ASHRAE standards are established by voluntary industry consensus, ASHRAE 62-1981R is also being developed using this procedure. When completed, State and local governments can choose to impose the stadard regionally on either a voluntary or mandatory basis, if at all. DOE feels the voluntary industry consensus standard process is appropriate for the establishment of ventilation standards to maintain acceptable indoor air quality.

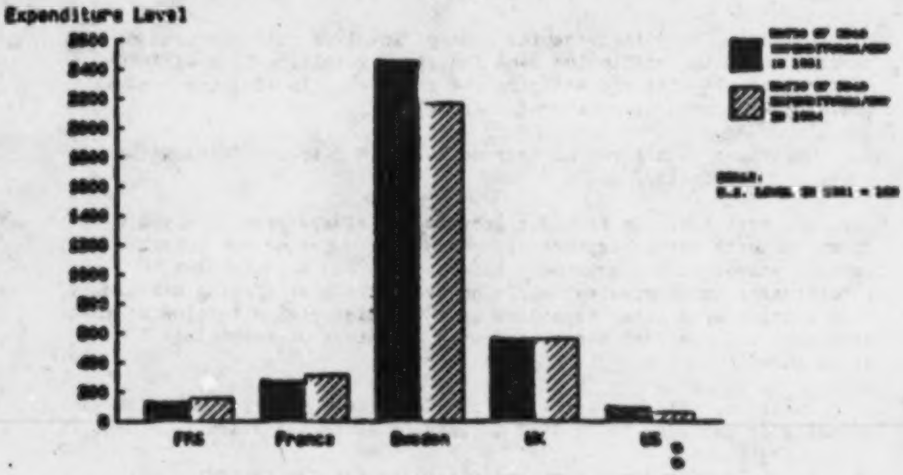
Industrial Conservation

Question: How does the $15.6 million requested for industry compare to the level of funds provided by other industrialized nations?

Answer: The Office of Industrial Programs sponsored a study entitled "Government-Sponsored Industrial Energy Conservation Research, Development, and Demonstration" which reviewed programs in the Federal Republic of Germany, France, Sweden and the United Kingdom. The report was issued in January 1985.

The following chart from that report compares the RD&D expenditures per unit of GNP of these four countries and the United States.

Comparing RD&D Expenditures in Industrial Energy Conservation per unit of GNP



It is important to note that this chart may be misleading without considering the differences in the varying types of governments and the ways in which they interact with industry.

Question: In the face of deleting all of this cost-shared R&D, is it your intent to ask industry to participate in joint ventures with the Department in the same kinds of R&D?

Answer: Although the FY 1987 budget request is less than the FY 1986 appropriation, it remains the policy of the Office of Industrial Programs to cost share research and development projects with industry. The amount of the cost share is determined on a project-by-project basis after considering the degree of risk involved, the nature of the project, and the ability of the industry to cost share.

Question: Why would industry be interested in doing this?

Answer: The office conducts long term research and development to conserve energy in the industrial sector. Reduced energy costs and new technologies result in improved process costs which then make an industry more competitive in world markets. It is an advantage to a company, or a group of companies, who are not able to conduct this research on their own, for a variety of reasons, to cost share with the Federal Government.

Question: How will the joint ventures be different than what you do now?

Answer: The joint ventures concept involves collaboration of several companies within the same industry, resulting in a different approach to planning and managing the research. In addition, industry would provide much greater cost sharing.

Question: Can't you already do R&D with joint ventures without a whole new initiative?

Answer: Yes. In fact our program has always been involved with joint ventures involving several companies, companies and universities, several universities, goverment laboratories and universities, laboratories and companies, etc. However, the cost sharing has always been a negotiated item, depending upon the financial situation of the proposers and the risk associated with the stage of technology development.

Question: Please review for the Committee the areas you will be reducing or deleting in FY 1987 in industrial conservation.

- Also provide a comprehensive list for the record.
- Provide, along with that list, those contracts or projects you will terminate before reaching the point at which you would normally test the technology.
- Provide also the amount of cost-sharing you have been receiving in those areas.

Answer: The following table provides all of the above requested information:

	Areas	Effort		Termination Before Normal Completion	Cost Sharing
		Reduced	Deleted		
a)	Advanced coal burner development for industrial furnaces		x	x	(1)
b)	Testing and evaluation of advanced heat exchanger concepts such as the coated/ woven ceramic fiber configurations	x			
c)	Field testing of a ceramic tubular distributor plate for a fluid bed heat exchanger		x	x	26.4%
d)	Development of a magnetic heat pump concept		x	x	(2)
e)	Design and fabrication of chemical heat pump components	x			
f)	Evaluation of techniques to reclaim waste gases such as hydrogen and carbon monoxide for feedstock use.		x		
g)	Evaluation of potential to use wood wastes for adhesive feedstock		x		
h)	Development of an air heater for an externally fired Brayton cogeneration system		x	x	7.6%
i)	Development of new thermionic diode concepts	x			
j)	Development of organic Rankine cycle components and working fluids		x	x	20% (3)
k)	Testing and evaluation of electrode materials for cells	x			
l)	Development of thin strip casting	x		x	12.4%
m)	Development of new process sensors	x			
n)	Development of textile coatings and UV curable coatings		x		
o)	Development of separations technology - membranes, chromatographic separation, drying processes	x			
p)	Operation of the industrial reporting program, and the Energy Analysis and Diagnostic Centers		x		
q)	Technology transfer activity	x			

(1) Fossil Energy Contracts-IP and FE each providing approximately 50% of funding. (2) Field Task Effort with INEL - Cost sharing not applicable. (3) Private sector contract on prime mover is cost-shared 20%. Other work in this area is conducted under a task effort and cost sharing is not applicable.

Brayton Cycle System

Question: What development remains to be done on the externally fired Brayton Cycle System?

Answer: There are three basic areas that require development. First, detail design information on performance and materials must be obtained to be used as the basis for commercial designs of coal-fired atmospheric fluidized bed (AFB) air heaters. These units, which are planned for cogeneration service are significantly different from AFB boilers. This information will be obtained by modifying and operating an existing government-owned facility for the planned 2250 test hours. The principal U.S. boiler makers (Babcock & Wilcox, Foster Wheeler, and Combustion Engineering) have stated that lack of this design information is one of the major reasons that prevents them from offering this type of equipment for sale with commercial warranties at this time.

Second, a control system that will accommodate equipment components with widely varying speeds of reaction needs to be developed. For instance, the gas turbine prime mover can react to power level changes in a fraction of a second while the fluidized bed may take six minutes to react.

Third, high pressure, high temperature ducting to move the air from the gas turbine to the fluidized bed and back to the gas turbine needs to be developed. With these three developments completed the industry can be expected to conduct the product development and commercialization of this energy saving technology.

Steam Diesel Engine

Question: Please explain what a steam diesel engine is.

Answer: A "steam diesel" is a diesel engine that uses as fuel a slurry of coal and water in about equal proportions by weight. When injected into a diesel engine cyclinder the water turns very quickly into steam. This helps in the combustion process, contributes to the power output and decreases the atmospheric emissions.

Question: What is the industrial involvement in this project?

Answer: All of the development work has been done with industry. The fuel mixes have been prepared by three different U.S. firms (OTISCA, Amax, and Resource Engineers). The scientific work and project management has been done by a firm in Massachusetts (Thermo Electron). The test operations have been conducted by an industrial engine maker (Sulzer Brothers).

Question: What work do you plan to do on this engine concept?

Answer: Since the development and test work done to date has been so successful, IP has planned to continue the exploration of design and operational problems associated with the use of coal/water slurry fuel.

A development program to identify and correct the high wear rates of components (piston rings, cylinder liners, injection nozzles, etc.) will be conducted. This will require the use of a laboratory device whose wear characteristics are very similar to the wear characteristics of a full size engine.

An investigation of the rheology of the coal-water slurry will be required to correct the very high viscosity that occurs with the very high shear rates encountered in successful slurry injection. This great increase in viscosity, making it very difficult to pump, is not encountered when using coal-water mixtures for furnaces and has not yet been encountered when attempting to run high speed diesel engines on coal-water mixtures because the conditions are different.

An engine test facility, whose cost will be heavily shared by industry, is being planned. This facility will allow United States engine, fuel and equipment makers to test their new development under consistent conditions to determine operating problems prior to incorporation of the development in their equipment.

Advanced Coal Combustion

Question: What has been accomplished in the development of advanced coal combustors?

Answer: It has been established that the slagging coal combustor is technically feasible; pilot scale units have been fabricated and tested; evaluations of three combustors for specific industrial boiler markets have been made; and a bench scale wet oxidation system laboratory unit has been fabricated and is being tested.

Question: What is the next logical step?

Answer: Confirmation, by test, that the NO_x emissions can be controlled by combustion staging; and testing to determine if flue gas cleanup can be utilized for retrofit applications in lieu of the use of compliance coal.

Report on Industrial Energy Efficiency Improvement

Question: Please provide for the record the specific legal citations that require an annual report on industrial energy efficiency improvement.

Answer: Under the provisions of the 1975 Energy Policy and Conservation Act (P.L. 94-163), as amended by the 1978 National Energy Conservation Policy Act (P.L. 95-619), certain corporations in major energy consuming industries are required to report data on energy efficiency improvement and on recovered materials utilization to the Department of Energy. The regulations governing the identification of corporations required to report and establishing the reporting requirements are contained in Title 10 of the Code of Federal Regulations (CFR Part 445), entitled, "Industrial Energy Conservation Program." The requirement for an Annual Report to the Congress and to the President is specified in Section 375, C of the Energy Policy and Conservation Act (P.L. 94-163).

MECS

Question: Have you had any input into the Manufacturing Energy Consumption Survey being undertaken by the Energy Information Administration?

Answer: Yes, discussions between EIA and the office which conducts the 189 survey, the Office of Industrial Programs, took place during the planning stage for MECS. In addition, in February 1984 comments on MECS were formally requested by EIA, and were provided by CE. Recently EIA and CE have been working very closely to coordinate and simplify activities related to the collection of MECS and 189 data.

Question: Do you think it is a better vehicle for getting industrial energy usage data than the report you now generate?

Answer: The current report (CE 189) was never intended to provide a statistically reliable data base on industrial energy consumption; it was designed to monitor the progress of a select group of industries in improving their energy efficiency. As a result, data is collected only on major energy consuming companies, with much of the data being aggregated (by industry associations). MECS data will provide a statistically valid representation of energy consumption and will allow analysis on a 3 or 4 digit SIC basis, or on a geographic basis. Since this is not possible with the CE-189. MECS will provide a much better vehicle for providing industrial energy usage data.

Automotive Stirling Engine Program

Question: How is the automotive industry participating in the Stirling engine program:

Answer: There is essentially no direct participation by the automotive industry in the Stirling engine program. During FY 1984 both General Motors and John Deere performed evaluations of a MOD I Stirling engine. Continuous efforts have been expended to keep the automotive industry aware of progress and technology developments in the program, and MOD I engines have been made available to any potential user for their evaluation. Despite these efforts, the automotive industry has shown little or no interest in commercialization of the technology. In the MOD II fabrication efforts, John Deere has been involved in the design and manufacture of the engine block, and has expressed interest in fabricating future prototypes. However, there is no indication that John Deere will cost share in any subcontracts for prototype fabrication.

Automotive Gas Turbine Program

Question: Do the two gas turbine contractors have working relationships with different ceramics producers and manufacturers?

Answer: Each of the gas turbine contractors have working relationships with most of the major ceramic producers and manufacturers in the world. The majority of these ceramic suppliers provide components to both gas turbine contractors. The ceramic component subcontractors for each of the prime contractor teams are below:

- Allison/Pontiac Team
  - Rotors
    - Sohio Engineered Materials
    - G. T. E.
    - Kyocera
  - Scrolls
    - Sohio Engineered Materials
    - Kyocera
    - Norton
  - Outer Backplate
    - Sohio Engineered Materials
    - Kyocera
  - Inner Backplate
    - Sohio Engineered Materials
    - Corning
    - G. T. E.
    - Kyocera
  - Vanes
    - Sohio Engineered Materials
    - G. T. E.

- Shims
  - Kyocera
  - Feld Muehle

- Combustor Body
  - Sohio Engineered Materials
  - Kyocera
  - ASA HI
  - Amercon

- Dilution Segment
  - Sohio Engineered Materials
  - Kyocera

- Dome
  - Sohio Engineered Materials
  - Kyocera

- Regenerator Disk
  - Corning
  - N.G.K.

- Bulkhead
  - Corning
  - Interturbine Coupling
  - Sohio Engineered Materials
  - Pure Carbon

- Exhaust Coupling
  - Sohio Engineered Materials
  - Coors
  - N.G.K.

- Piston Ring
  - Pure Carbon

- Thermal Barrier Ring
  - A.C. Sparkplug

o Garrett/Ford Team

- Flow Separator Housing
  - Corning
  - AiResearch Casting Co.

- Turbine Shroud
  - Sohio Engineered Materials
  - AiResearch Casting Co.
  - N.G.K.

- Turbine Rotor
  - Ford
  - AiResearch Casting Co.
  - N.G.K.
  - Kyocera

- **Inner Diffuser Housing**
  - **AiResearch Casting Co.**
  - **N.G.K.**

- **Outer Diffuser Housing**
  - **AiResearch Casting Co.**
  - **N.G.K.**

- **Combustor**
  - **Sohio Engineered Materials**
  - **Pure Carbon**
  - **Kyocera**

- **Stator Vane Segments**
  - **Sohio Engineered Materials**
  - **Ford**
  - **AiResearch Casting Co.**

- **Turbine Transition Liner**
  - **Sohio Engineered Materials**
  - **AiResearch Casting Co.**
  - **N.G.K.**

- **Combustor Baffle**
  - **Sohio Engineered Materials**
  - **AiResearch Casting Co.**

- **Bolt/Rocker Assembly**
  - **Sohio Engineered Materials**
  - **AiResearch Casting Co.**
  - **N.G.K.**
  - **Kyocera**

- **Regenerator Shield**
  - **Sohio Engineered Materials**
  - **AiResearch Casting Co.**

- **Turbine Backshroud**
  - **Sohio Engineered Materials**
  - **N.G.K.**

- **Regenerator Disk**
  - **Corning**
  - **N.G.K.**

Question: How many engines does each have?

Answer: The Allison/Pontiac team has two complete prototype gas turbine engines in the program. The Garrett/Ford team has three complete prototype engines. Both contractor teams also have a range of test cells in addition to the prototype engines which are used for component evaluations and certifications.

Methanol Fueled Federal Fleet

Question: Where are the methanol fueled vehicle fleets and of what kinds of vehicles do they consist?

Answer: It is planned to operate methanol fueled vehicles at three Federal fleet locations. The first location is at Lawrence Berkeley Laboratories in the San Francisco area, and ten 1984 Chevrolet Citations (five methanol and five gasoline) with 2.8 liter, V-6 carbureted engines have been in operation since November 1, 1985. These vehicles were modified for methanol fuel use by the Bank of America.

The second location is at Argonne National Laboratory. Nineteen vehicles (ten methanol and nine gasoline) will be operated in this cold-weather fleet. Ten of the vehicles will be 1986 Chevrolet S-10 pickup trucks equipped with 2.5 liter, 4 cylinder engines using throttle-body fuel injection. The other nine vehicles will be 1986 Ford Crown Victoria security models equipped with 5.0 liter, V-8 engines using multi-point fuel injection. All of the vehicles are specified to operate down to 5°F compared to 35°F for the Citations. Procurement of these vehicles is being finalized by GSA, and operations should begin this summer.

The third location will either be at Oak Ridge National Laboratory or in Washington, D.C., depending on funds remaining after the ongoing GSA procurement actions are completed. The Oak Ridge fleet would consist of ten (five methanol and five gasoline) 1986 Buick Regals equipped with 3.8 liter, V-6 turbocharged engines using multi-point fuel injection. The Washington, D.C., fleet would consist of two 1986 Ford Crown Victorias modified to have an automotive flexible fuel capability allowing the use of neat methanol, gasoline, or any combination of the two.

High Temperature Materials Laboratory

Question: What will the staffing costs be for the High Temperature Materials Laboratory?

Answer: During FY 1987 the High Temperature Materials Laboratory will initiate operations and begin placement of permanent User Staff Personnel. The costs associated with the continuation of pre-operational support activities and partial-year permanent staff are estimated to be $1 million. In the out years it is estimated that the yearly staffing costs will be $1.5 million.

Question: How will it be determined what experiments are carried out in the lab?

Answer: The access of users to the High Temperature Materials Laboratory will be determined by a User Committee which will include representatives of Oak Ridge National Laboratory, industry, and universities. Applications for conducting experiments in the lab will be made by submission of relatively brief written proposals, similar to the procedure used for the Holifield Heavy Ion Research Facility.

Proposals will be judged based on scientific merit, relevance to DOE programs and goals, and availability of the particular instruments required in the experiment.

Ceramics Technology Program

Question: In your ceramics work, what is the extent of industry involvement?

Answer: Industry has a great and continuing involvement in our ceramics work. The original long-range plan for our ceramics research efforts was developed through a comprehensive industry assessment. Industry is directly involved in the implementation of our work through competitive, cost-shared contractual relationships. In addition, industry is involved in oversight and guidance for our ceramic activities through periodic workshops, membership on the National Materials Advisory Board Committee which reviews the program, and membership on the High Temperature Materials Laboratory (HTML) Advisory Committee which reviews the construction and operations of the HTML.

Question: How are the programs developed?

Answer: The basic plans for the Ceramic Technology for Advanced Heat Engines Program was developed through an in-depth survey of the ceramic industry, the heat engine industry, other government laboratories, and universities. A common work breakdown structure was developed with NASA and coordinated with other government agencies. Based on the results of these efforts, a prioritized catalog of ceramic technology needs was generated, and industry in-house efforts and capabilities were analyzed. A detailed multi-year research plan was formulated to meet these needs, including technical objectives and requirements, research skills required, and the organizations and resources needed to implement the work plan. The research plan has been implemented through contracts and grants with industry, universities and government laboratories. The research agenda is continuously updated through workshops with industry and the scientific community.

Question: For FY 1985, FY 1986, and FY 1987 please provide for the record how funds are allocated to universities, national labs, and industry.

Answer: The distribution of R&D funding between universities, national labs, and industry for FY 1985, FY 1986 and FY 1987 is shown in the following table:

(Dollars in Thousands)

	FY 1985		FY 1986		FY 1987	
	$	%	$	%	$	%
Universities	886	20	1,079	13	1,350	25
National Labs	1,897	43	2,502	31	1,935	35
Industry	1,643	37	4,489	56	2,195	40

Question: Is there industrial cost-sharing involved?

Answer: Despite the basic nature of the program activities, industry cost-sharing is almost always involved. Industry cost-sharing normally is obtained in the 15 to 25 percent range.

Question: How will this program tie into the ceramics component testing by the gas turbine manufacturers in FY 1987?

Answer: Results from research efforts in the program will flow through the ceramics industry into improved components for testing by the gas turbine manufacturers. The results of component tests will provide feedback for further research direction. Research activities now underway which will have a direct impact on improved gas turbine components include silicon carbide and silicon nitride powder synthesis, wear resistant coatings, whisker toughened silicon nitride, composite development, ceramic joining, and dynamic interfaces.

Question: In your opinion is this an area where government funding and provision of facilities is providing an enhancement of the technology available to industry and an acceleration of the commercialization of ceramics technology?

Answer: The development of a ceramics technology base for successful commercialization by industry of ceramic components requires some unique ingredients. First of all, the processing and nondestructive evaluation procedures normally require sophisticated and expensive equipment and instrumentation. Secondly, the technology base is very complicated since the characteristics of the final product are greatly influenced by not only the basic materials, but by each of the processing steps involved. Design methodology parameters are completely new and different from those developed for metals. It is highly unlikely that any one industrial organization can address and solve all of the interrelated problems to be addressed. Government funding is providing an enhancement of the technology available to industry by serving as a catalyst for widespread industry involvement while also providing resources for solving specific research problems and making the results available to all of industry. The provision of facilities such as the High Temperature Materials Laboratory makes available to industry equipment, instrumentation and scientific staffs which they can not afford at these early development stages. These government efforts most certainly are providing an acceleration of the commercialization of ceramics technology.

Question: By agency, what is the estimated funding provided by the government for structural ceramics in FY 1985, FY 1986, and FY 1987?

Answer: Listed below is the estimated funding by government agency for structural ceramics in FY 1985, FY 1986, and FY 1987.

Government Agency/Program	Funding ($ in Millions) FY 1985	FY 1986	FY 1987
Department of Energy			
Conservation			
Transportation	17.9	18.7	11.7
Industry	1.7	1.5	.8
Energy Utilization Research	1.8	1.8	1.0
Fossil Energy	1.5	1.2	.9
Energy Research	4.6	4.5	4.5
NASA	5.4	4.5	4.6
National Science Foundation	3.6	3.6	3.7
National Bureau of Standards		2.2	3.0
Department of Defense			
DARPA	9.4	10.0	5.0
U.S. Air Force	4.7	4.7	5.0
U.S. Army	2.5	4.4	4.7
U.S. Navy	1.4	2.3	2.3
TOTAL	54.5	59.4	47.2

The above information was obtained through direct contacts with responsible program and project managers.

Electric Vehicle Batteries

Question: Were the battery development programs for which you are deferring funds cost-shared with industry?

Answer: Yes. The Nickel/Cadmium battery development contract with the Energy Research Corporation is 22% cost-shared and 14% of the Iron/Air battery development contract cost is borne by the Westinghouse Corporation. Both the Flow-thru Lead-Acid and Zinc/Bromine battery technology development contracts are 25% cost-shared by the Johnson Controls, Inc. Currently, the Department has no ongoing development project in Nickel/Zinc battery technology.

Electric Vehicle Propulsion Technology

Question: What are the differences in technology between the single and dual shaft vehicle systems under development?

Answer: The technologies differ in several ways. The dual-shaft approach involves a configuration in which the electric motor and the transaxle are separate units which are mounted side by side and connected by a chain drive. The electric motor shaft is oriented parallel to the axis of the transaxle shaft. The benefits of this technological approach are that it is conducive to use with more conventional transmissions and is of minimum length along the axis between the vehicle wheels. The control electronics for the a.c. motor use an innovative field-oriented-control technique.

The single-shaft approach involves a unique, innovative configuration in which the electric motor and transaxle are mounted on a single, common shaft as an intregal unit operating in a common housing using common lubricating oil. The benefits of this technological approach are that it is extremely compact, lightweight, and efficient. Additionally, it could conceivably be mounted on a solid rear axle, much like a conventional differential, and thereby ease packaging requirements, reduce cost, and increase reliability. The a.c. motor incorporates a permanent magnet armature composed of a new, advanced magnetic material and the control electronics involve more integrated architecture. These motor and control electronics attributes are conducive to reduced cost and increased reliability.

Question: Why are you developing the complete system for one and not for the other?

Answer: Funding is being requested to continue the development of the dual-shaft propulsion system which has progressed to the point where a complete proof-of-concept system can be demonstrated including the integration of an advanced experimental battery subsystem. The design phase of the other propulsion system will be completed using FY 1986 funds.

Question: What would it cost per year to complete development of the second system, the ETX-II?

Answer: The Government's cost share for completing the ETX-II program as originally planned will require $3.0 million in FY 1987, $2.0 million in FY 1988, and $0.5 million in FY 1989.

Question: What is the status on the sale of land, proceeds of which are intended to finance the ETX-II design effort?

Answer: A meeting between the Department of Energy legal staff and Jet Industries with respect to the sale of the land and repayment of funds in accordance with the workout agreement is scheduled for the week of March 24, 1986.

Question: Your budget (p. 52) states that the dual-shaft system development will be continued at a low level and extended schedule. Please provide a comparison of current funding and schedule versus the previous plan.

Answer: A comparison of the current funding and schedule versus the previous plan for FY 1987 follows.

	FY 1987 Funding	Program Completion Date
Current Plan	$1,640,000	September 1988
Previous Plan	$2,000,000	July 1988

INEL Dynamometer Testing

Question: Funds were provided in FY 1985 to set up vehicle dynamometer testing at INEL. When was the dynamometer installed?

Answer: The dynamometer installation at the Idaho National Engineering Laboratory (INEL) was completed in August 1984 and vehicle testing was initiated in September 1984.

Question: Why are you terminating testing in FY 1987?

Answer: The decision to terminate dynamometer testing at INEL in FY 1987 was made following a review of program priorities in view of anticipated budget constraints and a delay in the availability of new technologies requiring evaluation.

Question: What will you do with the equipment?

Answer: At the present time our plans are to maintain the facility in a standby mode pending a detailed review of the testing requirements for developing battery and propulsion system technologies.

EPRI/DOE Test Van Program

Question: Have funds been provided for production of a test van for the joint EPRI/DOE program?

Answer: No funds were requested in the FY 1987 budget. The program was supported in prior years under the electric vehicle test and evaluation subprogram.

Question: What would the cost be to complete van construction and then test the van? Over what period of time?

Answer: There are two parallel contracts being funded in the preliminary design phase of the EPRI/DOE Field Test Van Program. One contract is for a 1-ton payload van and the other is for a 1/2-ton payload van. Although DOE cost shared both contracts during the preliminary design phase, it was DOE's intention to only support the construction of the smaller van if the programs were to continue. The cost for the final design and construction of the 1/2-ton payload van is expected to be approximately $1,300,000. Testing of the van would cost an additional $200,000 and the total activity including testing would cover a period of 18 months.

Question: Where would the vans be tested?

Answer: DOE and EPRI planned to test the vehicles at both INEL and the Tennessee Valley Authority EV test facility.

Question: How does this program tie-in to your propulsion systems program?

Answer: The objective of the EPRI/DOE van program is to obtain a system that is representative of the most recent vehicle technologies (such as the new minivan series) with a current technology direct current (d.c.) drivetrain and battery system. The vehicle is intended to be used by DOE as a test bed for evaluating new battery technologies in a field environment. EPRI is interested in pursuing the near-term commercialization potential of the vehicle. The propulsion systems program is focusing on research and development of advanced alternating current (a.c.) drive systems that have the long-range potential of being competitive with other alternative transportation systems.

Industry Interest in Electric Vehicles

Question: Does there continue to be significant interest in electric vehicles by major industrial contractors? If so, please provide for the record who those contractors are, what their involvement is, and how they would potentially be involved in commercializing electric vehicles.

Answer: The Ford Motor Company is continuing the development of an advanced single-shaft a.c. propulsion system in a cost-shared contract with the Department. The Eaton Corporation is continuing the development of a dual-shaft a.c. propulsion system including a nickel-iron battery. Both of these propulsion systems are for a minivan application. Johnson Controls, Inc., a major battery supplier from the auto industry, is developing lead-acid and zinc-bromine batteries for the electric vehicle application. General Motors Truck and Bus Group is providing Griffon electric vans for the Department's Test and Evaluation Program. All of these firms would be competitors in the eventual commercialization of electric vehicles as the market develops. In the private sector the Electric Vehicle Development Corporation, composed of 35 public utilities, has initiated a program to begin the commercialization of electric vans by placing 33 electric vans in operational service by utilities in the United States and Canada. The General Motors Truck and Bus Group has established a parts supply system and infrastructure support for these vans.

Electric Vehicle Energy and Cost Projections

Question: A briefing chart shows a 63% reduction in energy consumption in electric vehicles since 1978-79. Based on the technology being developed, what are your projections of additional decreases?

Answer: The data presented in the briefing charts was from the site operations field test activity and illustrates the improvements in energy consumption that was noted in these vehicles as a result of the product improvement program and research and development program. Recent laboratory tests with the Ford ETX-I advanced a.c. propulsion system and design studies being conducted for ETX-II and the dual shaft electric propulsion system indicate that the energy consumption can be reduced by an additional 50 percent below that currently being demonstrated in the field.

Question: At what point on the chart do electric vehicles begin to become competitive?

Answer: Energy consumption is only one of many factors in the equation relating the competitiveness of electric vehicles with other systems. The cost of the propulsion system components such as the motor, controller and battery and the cycle life of the battery are of greater significance. In terms of operating cost, our field test experience has shown that battery maintenance is much more significant than energy consumption. Our research and development program is concentrating on reducing each of these factors.

Question: Have vehicle and battery costs shown the same type of decrease?

Answer: The data referenced in the briefing chart is representative of state-of-the-art technologies for the time period from 1978 to 1985. Over this same period there has not been an appreciable decrease in the cost of existing battery and vehicle systems. However, the DOE research and development program is concentrating on reducing the cost of future propulsion and battery technologies and increasing battery life which will have a significant impact on life cycle cost.

Fuel Economy Data

Question: What is the cost of producing gas mileage guides in FY 1987 if legislation deleting the requirement is not passed?

Answer: Funds for the guide in FY 1987 would be used to produce the model year 1988 guide. The model year 1987 guide will be produced with funds made available in FY 1986. To produce and distribute the three million copies of the guide to new vehicle dealers, to provide for secondary distribution, and to produce a mid-year addendum of the guide would require $700,000 in FY 1987.

Question: What is the cost of the annual Transportation Energy Data Book?

Answer: The cost of collecting, analyzing, and presenting the data in this annual document is about $140,000. This includes the cost of acquiring and running data tapes, acquiring numerous publications and reports, sorting out data inconsistencies, assembling data in the format determined by DOE, searching out new data sources, producing the document, distributing the document, and responding to data requests from DOE.

Question: Who uses the data?

Answer: The Transportation Energy Data Book was originally, and is still, intended to primarily serve the program managers within the Office of Transportation Systems (OTS). It is necessary that individuals in OTS use a consistent, comprehensive and up-to-date data base in their daily work. The data book provides such a data base. As new office data needs develop, they are incorporated in the data book.

Over the years, hundreds of government and private sector researchers and program managers have come to depend on the data book. Edition eight of the data book was diributed to over 1,000 persons. Every member of the CTS staff received a copy as did several dozen other people in the Department of Energy. Of the other copies distributed, 30 percent went to other federal employees, 12 percent went to State and local government workers, 25 percent went to people at universities, and 33 percent went to individuals in the private sector or to trade associations.

Energy Conversion and Utilization Technologies

Question: In combustion work, you are developing a computer model of a pulse combustor, comparing it to experimental data and identifying further required refinements, all in FY 1986. What do you do in FY 1987 if refinements are needed?

Answer: In the combustion work, a one-dimensional nonlinear computer model of a pulse combustor will be developed in FY 1986. The predictions of this model will be compared with experimental data to identify further required refinements. These refinements will be incorporated and confirmed with experiments in FY 1987. The goal of this effort is to develop a comprehensive, experimentally validated model which includes the coupled heat transfer and combustion processes of a pulse combustion system and is suitable for use by the industry to design and develop pulse combustion systems of various sizes, using liquid and/or gaseous fuels, and for several applications.

Question: Will you continue to update the computer model?

Answer: Yes. The computer modeling effort will continue through FY 1988. Measurements of pressure, frequency, temperature, and velocity will be compared with the predictions of the nonlinear model, and a multidimensional model will be developed to fully characterize the pulse combustion system.

Question: If you don't who does?

Answer: If the ECUT combustion effort does not pursue the subject modeling activity, then it is likely that it will be addressed by the Gas Research Institute (GRI) and will develop a capability for gaseous fuels only, ignoring the promise of the liquid and solid fuel systems. In addition, the GRI will not have the added benefit of being able to validate its work using the best available experimental results. This initial modeling effort employs a specially designed and instrumented experimental pulse combustor, located at the Combustion Research Facility (CRF) at Sandia Laboratories, Livermore.

Question: What are the costs you plan for the Reversing Flow Test Facility in FY 1986? 1987?

Answer: The Reversing Flow Test Facility (RFTF), located at Argonne National Laboratory, is a specially designed experimental apparatus, implemented to study the basic principles that govern the performance of heat transfer components which operate in reversing, oscillating unsteady flow environments apparent in some closed-cycle energy conversion systems. The experimental conditions include the rapid gas flow reversals that exist in such devices as free-piston Stirling cycle engines and heat pumps. The apparatus provides detailed information on component behavior which cannot be provided from real engines. The data are needed to validate theoretical models of critical operating characteristics to improve understanding and the analytical prediction capabilities that are employed by the developers of closed-cycle energy conversion systems. In FY 1986, the costs planned for the experiments using the RFTF are $230,000. In FY 1987, consistent with the President's budget, the costs planned are $200,000.

Question: Have you conducted your competitive program for innovative energy devices?

Answer: Yes. On November 13, 1985, the Energy Conversion and Utilization Technologies Program (ECUT) held an Industrial Innovative Concepts Fair at which 10 industrial concepts, including novel energy conversion devices, were presented to the public. Along with the ECUT-sponsored concepts, 6 industrial inventions funded by the Energy-Related Inventions Program were also presented at the Fair.

Question: If so, what kind of contracts have you funded?

Answer: ECUT funded contracts on the following topics:

- Metal-Selective Electrodialysis Membranes for Electrowinning Pure Metals from Impure Solutions
- Continuous Casting of Thin Sheet Carbon Steel
- Hydrometallurgical Separation Using Predispersed Solvent Extraction
- Acoustically Aided Fine Particle Processing
- Complex Compound Temperature Amplifier
- High-Temperature Heat Pump
- Electric Field Dispersion of Plugged Solids
- Steam Hydrocarbon Reforming in Molten Carbonate Salt
- Production of Maleic Anhydride From C_4 Hydrocarbons Using Molybdenum Oxide Catalysts Doped with Simple Molybdates
- Improving Efficiency and Energy Utilization of Countercurrent Extraction Process Through the Use of Stabilized Predispersed Solvents

The value of each of these contracts ranged from $15,000 to $20,000.

Energy-Related Inventions Program (ERIP)

Question: Has interest in the inventions program subsided?

Answer: No. There has been a steady increase in the interest in the program, particularly by the states in their economic development activities. In addition, the quality of the invention submissions has improved and the number of contacts with innovative organizations such as innovation and incubation centers, small business development centers, university representatives, inventors groups, and state innovative program offices, has increased inventors'.

Question: Is there still enough workload and backlog to keep the program at FY 1986 levels if Congress so desired?

Answer: The Energy-Related Inventions Program could continue to support inventors at the FY 1986 level.

Question: In addition to direct funding of inventions what other activities is the program providing?

Answer: The program provides Commercialization Planning Workshops to help newly selected inventors in developing their best course of action through interaction with experts in the various phases of new product development. The program also distributes workbooks and other "how to" materials and provide potential grantees with business planning, marketing and licensing assistance. The program sponsors National Innovation Workshops to stimulate inventions and improve the quality of submission made to the National Bureau of Standards.

Question: What is the level of interest in your National Innovation Workshops?

Answer: The level of interest is increasing with attendance averaging 250 people at each workshop. The purpose of the workshops is to provide inventors and entrepreneurs with information on patenting, licensing, marketing, business planning, relevant DOE programs and other topics related to the innovation process. A number of regional groups have requested workshops for their area.

Question: Where are the six per year held?

Answer: Sites for the workshops are decided on the basis of the availability of a local sponsor and the geographical location. The workshop sites scheduled for FY 1986 are Salt Lake City, Utah; Honolulu, Hawaii; Newark, New Jersey; St. Louis, Missouri; Boston, Massachusetts; and Lincoln, Nebraska.

Question: Where would you hold the four in 1987?

Answer: The only site selected in FY 1987 is in Wisconsin. Other areas being considered include Florida, South Carolina, Oregon, North Dakota and Michigan.

Question: What is the difference between your innovation solicitation and the one conducted by ECUT?

Answer: The Innovative Concepts Program, which was formerly a part of the Energy Conversion and Utilization Technologies Program, has recently been merged into the Energy-Related Inventions Program.

Question: Do you have any interaction with the National Center for Appropriate Technology in providing commercialization assistance?

Answer: Yes. The National Center for Appropriate Technology is the contractor which operate the National Appropriate Technology Assistance Service (NATAS) which provides two types of commercialization assistance to the Energy-Related Inventions Program. First, NATAS conducts business planning sessions at all the National Innovation Workshops. Second, the Inventions Program refers inventors to NATAS when an inventor needs assistance to determine what options are available for commercializing a product and when an inventor needs assistance in planning how to start a business.

National Appropriate Technology Assistance Service (NATAS)

Question: What is your evaluation of the service?

Answer: The Department is very pleased with NATAS. The evaluation of services form which is sent out to all of those receiving technical and commercialization assistance is returned by approximately 35 percent of the users of NATAS. Since 20 percent of those returning the evaluation rate the service as excellent and 70 to 75 percent rate it as good, we believe the service is being effective.

Question: What were the results of the evaluation by Northwestern University?

Answer: The Department has not received the final report from Northwestern University, however, a preliminary report reveals a very positive reaction to NATAS. In the survey regarding the first year of operation 60 percent of the users rated the information or assistance received as valuable and of high quality. Approximately 75 percent of the users decided to continue a project after receiving NATAS assistance and approximately 15 percent decided to scale down their effort after contacting NATAS.

When the final report is received we will analyze the conclusions and recommendations to determine if we should make any changes to NATAS.

Question: What is your analysis of the training and commercialization proposals NCAT has made for the Weatherization Program?

Answer: In 1985 NATAS participated in several workshops sponsored by the Weatherization Program. NATAS will continue to provide technical and business planning assistance at Weatherization workshops if the Weatherization Program requests NATAS to do so without additional funding for this activity.

A "how to" workbook for the Weatherization Program was proposed in early 1985 by NCAT (the contractor who operates NATAS) as a joint venture with Argonne National Laboratory. The proposal was not funded and alternative strategies are now being pursued by the Weatherization Program.

Buildings and Community Systems

Question: Your budget proposes reducing efforts in this area from about $38 million to about $14 million, a decrease of over 60%. If there are impacts to the building sector, what are they?

Answer: DOE research in several areas of building technology will be terminated. It is expected that private sector organizations will continue research and development in these areas as dictated by their perceived needs for the advanced technology in meeting business goals of private enterprises.

Question: Is it still true that the companies in the buildings sector are generally small and that coordination of research in this area is difficult.

Answer: While there is great diversity in the sizes, locations, and interests of companies in the buildings sector, there are numerous professional and trade organizations that provide mechanisms for coordinating research activities and for assisting in transferring results of research to those enterprises which can proceed to develop economically viable products and distribute them to the end users (builders, owners, designers, etc.)

Question: What types of activities will be terminated by the FY 1987 budget?

Answer: DOE Buildings and Community Systems research will be terminated in the following areas:

- building materials research
- fenestration research
- building systems interactions
- building energy retrofit research
- advanced refrigeration systems
- equipment integration research
- combustion systems research
- test procedures and consumer education research
- district heating and cooling research
- community energy planning, development and management research
- utility applications
- research utilization
- energy efficient buildings center
- fellowship program

Question: Provide a detailed list for the record, including those contracts that would be terminated before you reach the point you would have expected had research funding continued at current levels, and also how much cost-sharing was involved in those areas.

Answer: In the Appliance Standards subprogram, research conducted by the National Bureau of Standards in support of DOE test procedures will be terminated. No cost sharing is involved.

In the Community Systems subprogram, both district heating and cooling and community energy systems integration activities will be terminated. The district heating and cooling activities to be terminated include advanced fluids research, components research (e.g. piping and metering) and feasibility assessments. Cost sharing has varied from project to project within a range of 15 to 35 percent. The energy systems integration activities include site design research and the cost-shared urban consortium project. In this subprogram, current contracts will not be cancelled, but the planned next phase of the research, or the planned next round of district heating and cooling feasibility studies and urban consortium projects, will not be implemented.

In the Technology and Consumer Products subprogram all research in the equipment integration activity will be discontinued. Two annually-renewed contracts with the University of California to investigate the effects of advanced lighting on equipment operators and building occupants will not be renewed. Other research will not proceed to the planned next phase. Some of this research was cost shared in 1986 by EPRI ($500,000), and ASHRAE and GRI ($450,000) in 1986.

In the combustion systems research activity, it will be necessary to cancel a contract with Battelle Columbus Laboratories on condensing heat exchangers. In the advanced light sources activity, work by GE and GTE on electrodeless high intensity discharge lamps will not proceed to the next phase. This research was cost shared ($150,000) in 1986.

In the Building Systems subprogram, research will be terminated in building materials, fenestration, lighting quality, field validation, residential and commercial building systems integration, performance calculation, and building controls. While no contracts will be cancelled, previously planned continuation phases of research will not be conducted. About 15 percent of the cost of this work, had it continued, would have been cost-shared by the private sector. All building energy retrofit activities (single family, multifamily and commercial building) in this subprogram will be terminated, also. No contracts will be cancelled but this research, some of which has been cost-shared as much as 50 percent, will not proceed to the planned next phase.

Building Systems

Question: With what kinds of materials have you worked in the past?

Answer: Past DOE materials research has been concentrated on thermal insulating materials.

Question: What is the status of that work?

Answer: Work on "traditional" insulation materials (mineral fibers, cellulose, loose fills and foamed boards) will be completed by the end of FY 1987 using existing funds. Work on newer insulation materials and concepts (reflective foils, spray-applied products, insulating concretes and advanced concepts such as switchable R-value coatings) is only getting under way (initiated in FY 1985 and 1986). Work in the latter category is expected to be terminated when program funding is depleted during FY 1987.

Question: Is most of the ongoing work in this area involved in materials testing?

Answer: A total of 19 existing or proposed subcontractors and in-house (at Oak Ridge National Laboratory) tasks concern thermal building insulation. Of that number, 9 tasks involve materials testing.

Question: You are apparently continuing work on buildings subsystems including walls, roofs, and foundations? What facilities are needed in FY 1987 to test foundations?

Answer: Research needs and specific test facilities for foundation research have not yet been established. DOE is currently reviewing, in conjunction with a foundation systems research industry advisory panel, the requirements for experimental research is this area, and the need for validation of empirical data. This advisory panel provides valuable opinions and recommendations concerning roof research and test facility needs.

Question: Where would they be located?

Answer: The locations of elements of foundation test equipment have not been determined. Siting of such facility or facilities will depend on the evaluation of research needs. The possible need for multiple sites, to study foundation thermal performance characteristics in different climates, will be evaluated.

Question: What would they cost?

Answer: The costs of test facilities for foundation are strongly dependent on decisions concerning functional requirements, and on the number and locations of the facility elements.

Question: Please provide a list of the other facilities in the program, where they are located, and their cost.

Answer: Other wall, roof, and foundation research facilities include the following:

Facility	Location	Cost
Roof Research Center	Oak Ridge National Laboratory, Oak Ridge, TN	$2,100,000*
Calibrated Hot Box for Wall Research	National Bureau of Standards Gaithersburg, Maryland	$2,500,000

*$1,400,000 for initial test chamber configuration to provide limited test capability, $700,000 additional for full capability.

Windows and Daylighting

Question: In FY 1985, you completed a mobile test facility for windows and in FY 1986 you will terminate this activity. What other testing equipment or facilities will be terminated?

Answer: Other test equipment involved in terminated windows and daylighting research programs include the daylighting simulation facility (sky-dome), the total spherical illuminance scanner, the sky luminance scanner at the Lawrence Berkeley Laboratory in Berkeley, CA, and the evacuated glazing fabrication equipment (laser welder) at SERI.

Question: Who will do work in this area when you terminate the activity?

Answer: The disposition of the research facilities upon termination of the DOE research programs has not been determined. Several options may be considered, including transfer of the equipment to Universities (e.g., the University of California at Berkeley). It is expected that academic and perhaps private sector researchers will use these facilities insofar as they meet research needs. The laser welding equipment may be of use in continuing passive solar research at SERI.

Building Systems Interactions

Question: You propose to terminate all work in commercial and residential building systems interactions. Of what does this work consist?

Answer: This is research to develop an understanding of how building components and building equipment impact each other's performance. The research will lead to the development of an information base that industry can use in designing energy efficient buildings. This research became necessary when the results of previous research indicated that the interactions of specific building technologies resulted in less than the desirable efficiencies for which they were designed.

Question: Who will pick up the analytical work you are now foregoing?

Answer: We feel that this research should be picked up by private industry. These include the architectural and engineering professional organizations, the utility industry, corporations involved in developing controls, etc. If there is a need for this information, there are industries that will benefit and should respond.

Question: Who has the capability to do so?

Answer: The capability to conduct this research is available in many organizations. Including the American Institute of Architects, American Society of Heating Refrigerating and Air-Conditioning Engineers, Electric Power Research Institute, Gas Research Institute, Building Owners and Managers Association, and the National Association of Home Builders.

Building Standards

Question: In the standards area, what demonstrations are required by law?

Answer: Demonstrations are required of the Interim Voluntary Performance Standards for New Commercial Buildings in at least two climatic areas of the country and of the Interim Voluntary Performance Standards for New Residential Buildings in at least two climatic areas of the country.

Question: When and where will the demonstrations be conducted?

Answer: The demonstrations will be initiated shortly after the issuance of the Interim Standards. The locations for these demonstrations have not yet been finalized. However, it has been determined that it will be necessary to look at five climatic regions in order to appropriately report to Congress on the impact of the interim standards. Tentatively targeted cities for analysis include Milwalkee/Madison, WI; El Paso, TX; Washington, DC; Houston, TX/Lake Charles, LA; and Los Angeles, CA.

Question: How will the demonstrations be financed?

Answer: The standards demonstrations will be financed by the Department from appropriated funds. In addition, participation will be sought in the demonstrations by those Federal agencies which design and build Federal buildings. This is expected to include contribution of staff time and facilities. Participation will also be sought from professional societies and building industry organizations. In kind contributions will be sought from these groups.

Question: Have you issued standards yet?

Answer: None of the interim standards have been issued to date. The Voluntary Commercial Standard Notice of Proposed Rulemaking (NOPR) is undergoing internal review and revision prior to being issued this summer for a 90-day public comment period followed by necessary revisions and issuance as an interim standard.

The Department has divided the development of the Residential Standards into two projects. A Notice of Proposed Rulemaking has been developed which specifically deals with Federal residential buildings. This is undergoing internal review prior to its expected publication early this spring. A 90-day public comment period will follow publication prior to revisions and issuance as an interim standard.

The other portion of the Residential Standard, that which is to provide voluntary guidance for non-Federal residential buildings, is being developed in conjunction with industry in a consensus process. The basis for a NOPR is still under development and is currently planned to be published in the spring of 1988. This too will be followed by a public comment period, revisions and issuance of an interim standard.

Our efforts have been based on the premise that our first responsibility is to issue standards that are technically sound, effective, and usable. We have made, and will continue to make, within the limitations of our resources, every effort to develop and publish the standards in a timely fashion. The resolution of sensitive and vital technical issues, and our commitment to working closely with the building industry, in addition to the legislative and policy changes that have influenced the development of the program, have necessarily expanded the original timeframe for issuance of the standards. However, we remain firmly committed to the publication of standards that will achieve the greatest energy efficiency as easily and inexpensively as possible.

Question: Is there anything required by law beyond what you are doing in FY 1987?

Answer: Yes. At the end of each demonstration project, a report to both Houses of Congress is due on the findings and conclusions of the demonstration. Following this, final voluntary standards are required to be promulgated. In addition, the FY 1987 request only seeks sufficient funding for issuing interim standards for non-Federal residential buildings. A demonstration project will be required of this portion of the Voluntary Residential Standard.

Question: Is there any continuing requirement in this area after FY 1987?

Answer: The Department has divided the Voluntary Residential Standards development into two projects, a Federal Residential Standard project and a Voluntary Residential Standard project. This has been done to facilitate the development of the standards. It is assisting us to expedite the development of standards that will apply specifically to Federal residential construction while permitting the Department to work with industry in a consensus process to develop standards more appropriate to the design and construction of non-Federal residential buildings.

Industry Interaction

Question: In the entire building systems area, what industry groups do you work with?

Answer: The DOE building systems research programs interest with the following building industry groups:

AAMA - Architectural Aluminum Manufacturers Association
ACEC - American Consulting Engineers Council
AGA - American Gas Association
AIA - American Institute of Architects
ARMA - Asphalt Roofing Manufacturers Association
APACE - American Plywood Association Consulting Engineers
APCA - Air Pollution Control Association

ASHRAE - American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASTM - American Society for Testing and Materials
BIA - Brick Institute of American
BTECC - Building Thermal Envelope Coordinating Council
CISPI - Cast Iron Soil Pipe Institute
NAHRO - National Association for Housing and Redevelopment Officials
DBRI - Danish Building Research Institute
EEI - Edison Electric Institute
EPRI - Electric Power Research Institute
GA - Gypsum Association
GRI - Gas Research Institue
HVI - Home Ventilating Institute
IMI - International Masonry Institute
IREM - Institute for Real Estate Management
MIMA - Mineral Insulation Manufacturers Association
MHI - Manufactured Housing Institute
NAHB - National Association of Home Builders
NBMDA - National Building Material Distributors Association
NCL - National Construction League
NCMA - National Concrete Masonry Association
NCSBCS - National Council on State Building Codes and Standards
NFPA - National Forest Products Association
NIBS - National Institute of Building Sciences
NCR - National Research Council
NRCA - National Roofing Constractors Association
NWWDA - National Wood Window and Door Association
PCA - Portland Cement Association
RMA - Rubber Manufacturers Association
TASC - The Adhesive and Sealant Council

Question: What input do they have into your program?

Answer: A principal avenue for input from the building industry groups is the Building Thermal Envelope Coordinating Council and its various research coordinating committees. These committees are made up of private as well as public sector areas of building technology. Such committees have been established for the following areas of buildings technology:

1. Thermal Performance of Whole Buildings/Passive Energy Systems
2. Fenestration - Thermal and Daylighting
3. Building Thermal Envelope Materials
4. Air Infiltration and Ventilation
5. Roofing Design and Construction
6. Heat and Mass Transfer Measurements
7. Moisture Control in Buildings

In addition to this formal mechanism for communicating to DOE the research needs of the building industry, DOE and National Laboratory personnel participate directly in the activities of professional organizations such as ASHRAE and ASTM dealing with their fields of expertise.

Question: What is their reaction to your FY 1987 budget?

Answer: Reaction by industry groups to the proposed FY 1987 budget vary considerably, depending on the research area affected, the nature of the budget change, if any, and the degree of involvement by that group in the affected research. In general, these groups indicate that they recognize the reasons behind the budget request. Those groups most directly affected by funding reductions, and those involved in research which is being terminated are generally more opposed than others.

Question: How much of the work you are terminating has been coordinated previously with these groups?

Answer: All of the work for which no funding is requested in FY 1987 has been coordinated very closely with the appropriate buildings industry groups. This coordination should facilitate the transfer of responsibility for continuing research and development to the private sector organization with business or other interest in such technology.

Question: How much of your continued work is coordinated with these groups?

Answer: All of the continuing work of the building systems research is coordinated with the appropriate building industry groups. In addition to working with the more general-interest organizations such as ASHRAE and ASTM, the research also benefit for advice by program-area-specific industry advisory panel, and through interagency coordinating groups such as the Committee on Indoor Air Quality.

District Heating and Cooling

Question: What research programs do you have in district heating and cooling in FY 1986 and what does each cost?

Answer: The FY 1986 program consists of five technology research areas as follows:

(1) Advanced Fluids Research--Studies of additives to improve energy flow (slippery water) and enhance heat transfer from district heating and cooling distribution fluid (i.e., ice slurries). ($270,000)

(2) Components Research--Development of heat pumps for district heating and cooling systems, advanced meters for single dwellings, acoustic leak detection, in situ test methods for measuring heat losses from underground piping and analysis of thermal metering installation effects. ($600,000)

(3) Old District Heating Renovation Technologies--Studies of methods to renovate old steam systems using Scranton, Pennsylvania, system as a laboratory ($690,000 carry over from FY 1985 funds).

(4) Mine-Water Heat Exchanger--Development of a heat exchanger submerged into mine-water to extract heat directly from old mines in Scranton, Pennsylvania. ($1,000,000 carry over from prior year funds)

(5) Systems Assessment and Technology Transfer--Development of methodologies and performance of a comparative technical and economic evaluation of major district heating and cooling systems, participation in the International Energy Agency, and transfer of program research results. ($300,000)

Question: Will industry continue such research without government involvement?

Answer: The industry currently does not conduct research in district heating and cooling systems. In general the industry adopts components developed for other purposes for use in district heating and cooling applications, or imports such components from abroad. The present market for district heating and cooling is not viewed as large enough to warrant investment in research and development. Several companies have expressed interest in participating with the Federal government in developing needed technology and in fact several current projects are cost-shared between government and industry. In addition, several proposals for industry cost-sharing have been submitted in response to a competitive procurement under current review.

Question: How many feasibility studies for district heating systems have been funded in this program?

Answer: Altogether 51 communities have been funded for district heating and cooling feasibility studies.

Question: How many are expected to be funded in FY 1986?

Answer: DOE expects to fund 10-12 communities from a FY 1986 budget of $500,000.

Question: How many of those studies have led to design or implementation of district heating sytems?

Answer: There are 14 cities in the design stage. Five of the 14 are in construction.

Question: How many additional communities desire funding of feasibility studies?

Answer: In FY 1985, DOE received 87 proposal requests for funding, of which 15 were funded, leaving a total of 72 additional communities desiring funding. In FY 1986, DOE is not yet able to say because the closing date of the Request for Proposals is March 28, 1986.

Technology and Consumer Products

Question: What potential energy savings are there in improved refrigeration systems?

Answer: The Refrigeration Systems Research program has focused its research effort on electric driven systems (such as heat pumps, air conditioners, chillers, refrigerator-freezers, and commercial refrigeration systems) that have potential performance improvements of 50% or more, for an estimated savings potential of 4.2 quads of energy annually at 100% market penetration. Research, testing, and analysis have indicated that such improvements can be obtained using capacity modulated heat pumps and refrigeration systems using nonazeotropic refrigerant mixtures, and advanced refrigeration technologies applied to other refrigeration systems.

Question: On what technologies have you been working?

Answer: The Refrigeration Systems Research Program has been involved in research and development of refrigerator/freezer, gas fired water heaters, heat pump water heaters, electric bi-radiant ovens, motor/compressors for refrigerator/freezers and window air conditioners, supermarket refrigeration systems, pulse combustion water heaters, ground coupled heat exchangers, analytical design tools, air/air heat pumps, and supporting technology in each area.

Question: Has the research been completed?

Answer: All research in the appliance technology area has been phased out before completion. Research in heat pump technology is continuing.

Question: Has research been cost shared by industry?

Answer: Research cost sharing by industry has been about 33% of the total funding for the refrigeration program.

Question: Who in industry is involved?

Answer: The following companies have been involved in the Refrigeration Systems Research program:

1. Advanced Mechanical Technologies, Inc.
2. White Consolidated Industries (White Westinghouse Division)
3. Westinghouse
4. Energy Utilization Systems
5. Foster Miller Associates
6. Arthur D. Little, Inc.,
7. E-Tech, Inc.
8. Friedrich Air Conditioning
9. Niagra Mohawk Power Company
10. Copeland Corporation

Question: Why are you terminating combustion systems research?

Answer: By our estimates, the combustion systems research area only represents modest energy improvements. Funding is not appropriate in the currently constrained fiscal environment.

Question: Testimony before the Committee on February 25, 1986 by the Petroleum Marketers Association of American, states that there is significant research that can be done on oil-fired systems, including pulsed combustion. Do you agree?

Answer: We are in agreement with the Petroleum Marketers Association of America. However, we believe that industry will continue the research and development in the area of oil fired system technology.

Question: What level of research are you supporting in each of the gas, oil, and wood sectors, in FY 1986 and what research are you doing?

Answer: The FY 1986 funding for Combustion Systems Research is $667,000 after G-R-H reduction. This funding is split along the fuel related research as follows: 35% applicable to any fuel, 40% for oil, and 25% for wood. The FY 1986 Combustion Systems research effort includes activities to investigate corrosion mitigation techniques by assessing novel combustion approaches and design methodologies for metallic and non-metallic condensing heat exchangers; assess advanced technology oil combustion systems; and develop and evaluate instrumentation and methods for measuring the thermal performance of wood heating systems.

Question: What work are you doing in FY 1986 in equipment integration?

Answer: The portion of this activity related to lighting research has included four projects. One project involves experimentally evaluating the interactive impacts of lighting on the HVAC and envelope subsystems of a building. Another project has sought to determine the impact of lighting systems on the visual environment of visual display terminals (VDT) and potential performance degradation. A third project being conducted at the University of California Medical School seeks to identify and quantify impacts of lighting on the health and productivity of building occupants. The fourth project involves analyzing visibility models to determine the relationship between lighting, visibility and task performance. Another area of work in this research activity is investigation of the loss mechanisms and zonal energy performance in forced air residential distribution systems.

Question: Who will pick up this work when you terminate it in FY 1987?

Answer: In the lighting area, it is unlikely any of this work will be picked up by anyone, since it is high risk and long-term and would require substantial investment. Even though the Electrical Power Research Institute (EPRI) is cost sharing the lighting/heating ventilation and air conditioning (HVAC) interaction project at 50%, it is unlikely they will take up the funding slack because they are currently experiencing funding cut-backs themselves.

Question: Has industry been involved in this work? How?

Answer: The lighting/HVAC integration project has been cost shared by EPRI at 50% or about $500,000 over the life of the project There is extensive participation is made by industry on the advisory board for the project. In the lighting impacts research, an advisory board established to direct the project consists of representatives of the lighting, industry, medical profession and academia. All the project areas solicit and receive advice from professional societies and interested experts in the field. In addition, the health impacts research and VDT research are currently subcontracted to the University of California Medical School and University of California School of Optometry, respectively. The project on forced-air distribution in residential gas heating systems is cost shared with the Gas Research Institute and the American Society of Heating, Refrigerating and Air Conditioning Engineers. The FY 1986 cost share from these two organizations is $450K. Industry participation in this research is through membership in a joint Technical Evaluation Committee which oversees the technical directions of the research.

Least-Cost Planning

Question: What work are you doing in the "least cost" area in utility applications?

Answer: DOE is developing, in FY 1986, a plan for improved least-cost planning. On a continuing basis, DOE has reviewed the research and analysis activities of the Department's national laboratories and is preparing and distributing descriptions that will enable all those interested within the utility industry to request further in-depth copies of the research desired.

Further, DOE has made presentations and met with representatives from a variety of organizations to describe the background of the program, the possible future activities, and to solicit ideas and recommendations. The Department is also preparing materials that can be made available including reports on completed research and research in progress, and is studying various methods of making this information available, including mailing services and electronic bulletin boards. The program is functioning as planned within the budget reductions of the Gramm-Rudman-Hollings law. The amount available for the program is $951,000.

Question: Who is doing the work? Provide details for the record.

Answer: The Department of Energy has established a staff committee, chaired by the Director of the Office of Buildings and Community Systems, which is developing this research plan. The Department has assigned a task to the Pacific Northwest Laboratory (PNL) to develop options for the plans by surveying information needs of the utilities and the utility regulating commissions. PNL has let a contract, following a competitive process, to Temple, Barker and Sloane of Boston to support this activity. The Department has also conducted a public briefing, following an announcement in the Federal Register, at which comments were invited on the conduct of this program. The responses to this invitation will be reviewed and analyzed by the Department's staff.

Question: Our report last year specified that a detailed research plan should be developed in consultation with key national organizations.

Question: Are you doing that?

Answer: The Committee report specified that the research plan should be developed in consultation with the National Association of Regulatory Commissioners (NARUC), the Edison Electric Institute (EEI), the Electric Power Research Insititute (EPRI) and others. This is being done.

Question: With whom?

Answer: In addition to the DOE staff, three national laboratories and a consulting contractor have been assigned to this program. Funding allocations to date are as follows:

- Pacific Northwest Laboratory for management of a survey of information needs subcontracted to Temple, Barker and Sloane, Boston, Massachusetts -- $95,000.

- Lawrence Berkeley Laboratory, data analysis and review, $105,000.
- Oak Ridge National Laboratory, field work, $15,000.

The remainder of the funding appropriated for FY 1986 is uncommitted pending completion of a research plan in May 1986.

Question: When will a plan be developed?

Anser: The Department has scheduled the completion of this plan for May 1986.

Research Utilization

Question: What activities are involved in research utilization activities?

Answer: Activities include The Design and Energy Summer Institute held annually by the Association of Collegiate Schools of Architecture (ACSA) for architectual school faculty; The Energy Engineering Institute held annually by the American Consulting Engineers Council for engineering school faculty; The Design and Energy student competition organized by ACSA; support for the preparation of technical reports, summaries and guides to facilitate the transfer of technical information to the private sector; evaluations of the effectiveness of selected technology transfer activities; and, working with DOE's Office of Scientific and Technical Information, a bimonthly publication entitled, "Buildings Energy Conservation, a Current Awareness Bulletin."

Question: What organizations are involved?

Answer: The Association of Collegiate Schools of Architecture, the American Consulting Engineers Council, Oak Ridge National Laboratory, Solar Energy Research Institute, and Battelle's Pacific Northwest Laboratory.

Question: What is the response to these activities?

Answer: All the activities have received strong support and the organizations are anxious to continue them. The Energy Engineering Institute has been held six times, involving 300 faculty members from over 150 engineering schools. The Design and Energy Summer Institute has been held five times, involving over 350 faculty from more than 90 percent of the architectural schools. The Design and Energy student competition has had over 12,500 student participants since 1981 from more than 90 percent of the schools of architecture. The distribution of the Current Awareness Bulletin has increased to nearly 1,000 copies within the first year.

Appliance Standards

Question: Why do you want to repeal the statutory requirements for test procedures and consumers education in the appliance areas?

Answer: DOE has issued test procedures for all the appliances listed in the legislation. The Department believes that appliance industry could adopt these regulations and provide their own updating through the private sector concensus standards process. Also consumer education is best provided through the private sector.

Question: What type of consumer education activities do you do?

Answer: We continue to work with various groups, including manufacturers, utilities, public interest groups and the Federal Trade Commission (FTC) to develop a program that can be implemented by any interested party. The program utilizes information wherever available, such as industry appliance directories, to promote appliance energy efficiency and the labeling program. In addition, the Department works closely with FTC to determine the effectiveness of the labelings program format in order to aid FTC in making any revisions in the program.

Question: What is the status of the legislation to repeal the requirements?

Answer: Draft legislation is currently under consideration by the Department.

Employment Floors

Question: Please provide by program the funds necessary to support personnel at the level of Congressionally-mandated employment floors in FY 1987.

Answer: The following table reflects the FY 1987 funding required to support the employment floors.

Department of Energy
Energy Conservation Appropriation
(Dollars in Thousands)

Program Direction	FY 1987 Congressional Request	Cost to Maintain Floors	
		Total	Increase
Buildings and Community Systems........	$ 2,400	$ 3,650	$ +1,250
Industry................................	1,844	2,070	+ 226
Transportation..........................	1,400	2,195	+ 795
State and Local Assistance..............	5,000	10,700	+5,700
Multi-Sector............................	500	546	+ 46
Policy and Management...................	1,792	1,862	+ 70
Total Energy Conservation..........	$12,936	$21,023	$ +8,087

QUESTIONS SUBMITTED BY CONGRESSMAN RALPH REGULA

Overall Budget Request

Question: Last week when we held the hearing on the fossil budget it became clear that their budget intended to maintain the DOE in-house research program at the expense of the industry and university programs. Is your budget similar in this regard?

Answer: Where appropriate, industry and university program activities will be continued within available funding constraints.

State and Local Assistance Programs

Question: Your budget expects Congress to end funding for state and local programs with the assumption that states will have the money to fund these programs out of the oil overcharge monies. If DOE does not intend to monitor states use of these funds how can Congress make an informed assessment of your budget proposals?

Answer: The Department does plan to monitor the expenditures of the Exxon funds, consistent with the court order. The Exxon funds have been disbursed under court order directly to the States and the Department has obtained from the Governor of each State an acknowledgement, in writing, of the limitations on the use of the funds and an agreement to abide by the direction of the Court. The Department of Energy is providing guidance to the States on appropriate uses and will review the annual reports which the Court has directed the States to submit. The Department will report to the Court on the use of the funds.

Question: If your monitoring in fact showed that states were funding these programs wouldn't that make your case for ending federal funding stronger?

Answer: According to the Court decision, states are legally required to expend the Exxon funds in the same manner as the Warner amendment and the states have certified that they will do so. We will monitor the use of the funds in the manner described above.

Question: A recent report by a pair of leading energy conservation organizations, "Federal R&D on Energy Efficiency, A $50 Billion Contribution to the U.S. Economy," concluded that DOE's proposal to cut energy conservation r&d by 60% in FY 87 would seriously harm the competitive position of U.S. industries involved in developing advanced, energy-efficient technologies. How do you respond to that conclusion?"

Answer: The conservation budget proposed continued support to program activities which have the highest probability to help improve energy efficiency in the future. We believe that these activities will support the competitive position of U.S. industry. We believe that it is important in light of our Nation's long range security that we develop a technology base which will allow industry to futher develop these technologies when it is considered most appropriate to do so. The FY 1987 request and the associated outyears in the budget are sufficient to provide this base for our long-term energy security.

Question: According to Inside Energy, DOE's own multiyear plan for energy conservation and the agency's Energy Research Advisory Board are cited in the report in support of the contention that the federal government's role in conservation r&d is essential and that preciptous cuts in ongoing research will not result in a corresponding increase in private sector r&d. How do you respond to that?

Answer: The mission of the DOE Conservation program is an integral part of the national energy policy in seeking the goals of energy stability, energy security and energy strength. Budget reductions have been taken, based on government-wide and program specific priorities in all civilian R&D programs. We believe that adequate funding has been provided in the FY 1987 budget request to allow the fundamental technical issues in each area of research to continue to be addressed across a balanced portfolio of technologies. We intend tq maximize our resources to advance the state of the art in these technologies, while at the same time contributing to the Congressional and Administration goal of reducing the federal budget deficit.

Question: Your budget justification says: "This rise in total energy consumption serves as a reminder that conservation must continue to play a prominent role in national energy policy to ensure the Nation's long-term energy security and economic well-being." How then do you justify a $350 million cut in your FY87 budget?

Answer: The Department considers conservation programs and research and development important ingredients of the Nation's energy policy. The $350 million reduction includes state programs, which will be supported in the future by oil overcharge funds. Other proposed reductions in new budget authority reflect a variety of considerations including the successful completion of various lines of research, a focusing of public investment in the more basic areas most appropriate to the Federal role in technology research, difficult decisions among competing technical priorities and the availability of monies at the state level for energy conservation programs. The Budget Request reflects a commitment, within available reesources, to sustaining a balanced R&D effort.

Question: Your budget (pg. 17) says: "One of the primary goals of all the applied research areas in Conservation is to effectively transfer technology from Federal and university laboratories to private industry. The earlier industry is involved, and the more directly that the research agenda is guided by the companies' own economic self-interest, the more effective the transfer is likely to be." How do you justify a budget which essentially cuts out industry and university involvement in light of this statement.

Answer: The applied research programs, as well as the other programs of the Department, have been critically reviewed in light of the need to accomplish reduced Federal outlays as well as the need to focus Federal investment in more basic research which will benefit a cross section of industrial interests over the longer term. The Budget Request reflects a commitment, within available resources, to sustaining a balanced effort across major technology options in a manner that focuses expenditures in the highest priority scientific and technical investigations. Cost-shared industry participation is being encouraged and university participation in more basic research efforts will continue.

Buildings and Community Systems

Question: Your budget justification (pg. 24) lists as an FY 85 or FY 86 accomplishment the completion of a detailed assessment of technical issues concerning ureaformaldehyde foam insulation. As I recall last year's justification listed this as an accomplishment in FY 84 and said the study had been published.

Answer: The FY 1984 report covered the assessment of foamed-in-place ureaformaldehyde. Work on "traditional" insulation materials (mineral fibers, cellulose, loose fills and foamed boards) will be completed by the end of FY 1987 using existing funds. Work on newer insulation materials and concepts (reflective foils, spray-applied products, insulating concretes, and advanced concepts such as switchable R-value coatings) is only getting under way (initiated in FY 1985 and 1986). Much of the work in the latter category is expected to be terminated prior to completion when program funding is depleted during FY 1987 in accordance with Administration guidance.

Question: Your budget (pg. 30) lists thermally activated heat pumps as an area with the greatest promise for significant energy savings in the Technology and Consumer Products subprogram. Your budget on page 23 shows this program being cut by $364,000, why are you cutting the area you claim shows the greatest promise?

Answer: Although thermally activated heat pumps show the greatest potential energy savings, fiscal constraint and budgetary requirements make it necessary to cut a minimal amount of $364,000 from this program area.

Question: Your budget (pg. 23) shows an increase of $200,000 for technology transfer. Yet you also propose eliminating the Urban Consortium, which I understand shares results of successful projects with local communities. Isn't that technology transfer?

Answer: The Urban Consortium Energy Task Force conducts applied research and technology transfer projects that meet the specific needs of its 42 member jurisdictions. Although Congress provided $1.96 million for the Urban Consortium in FY 1986, the Department has not recommended funding in FY 1987 because this technology transfer activity is limited to the members of the Urban Consortium. The funding of $400,000 requested for technology transfer will support activities that serve all potential users of building energy technology.

Question: Your budget (pg 33) says that in FY 85 you initiated activities to encourage voluntary utility energy programs. Have you had any success with this initiative and could you elaborate on what you have done along this line?

Answer: In FY 1985 work was carried out at Lawrence Berkeley Laboratory for conservation programs on utilities' peak levels and the development of a model to measure the impact of energy conservation on utilities' peak level. Further, Lawrence Berkeley Laboratory provided planning support and a review of utilities' existing analysis tools.

Question: Last year I asked a question about technology transfer and you replied that a technology transfer plan was being developed for the Office of Building Energy Research and Development to better coordinate and monitor the technology transfer activities. Has that plan been completed?

Answer: A report, "Technology Transfer for DOE's Office of Buildings and Community Systems (OBCS): Assessment and Strategies," is in final draft and is being reviewed. It provides an overview of the OBCS program, its R&D products, and its audiences. It also discusses the strengths and weaknesses of alternative technology transfer mechanisms and strategies.

Industrial Conservation
Thin Strip Casting Program

Question: Last year one of the highlights of your industrial conservation budget was your proposed work in the areas of thin strip casting research. This year that program too is gone. The original plan called for work on both prepilot-plant-phase small casting machines during 1986 with selection of the preferred process in 1987. As I read your FY 87 budget you have arbitrarily chosen the winning technology which you will test and then terminate the program. From a technological standpoint do you have sufficient information to select which of the two technologies is preferable at this stage?

Answer: Under the U.S. Steel/Bethlehem cooperative agreement for development of a thin slab casting process, work is continuing on both horizontal and vertical casting systems. We do not currently have sufficient information to select between these two approaches. In October 1985 the contractor agreed, after extensive project reviews, to cancel the order for a Hazelett 17 inch wide vertical "dynamic simulator" caster. This was done after DOE and U.S. Steel/Bethlehem jointly agreed that acquiring the vertical machine originally planned would incur higher costs and longer delays than necessary. Alternative equipment for testing of a vertical approach has been designed, and is currently being fabricated and installed. Both horizontal and vertical approaches will be tested well into FY 1987, and perhaps even into FY 1988, before a final decision is made on the most attractive option for a pilot facility.

Question: Wouldn't it make more sense to provide sufficient funding in FY 87 to allow the project to reach a logical decision point at the end of the prepilot-plant phase so that all work to date is not wasted?

Answer: Yes. In fact, the FY 1987 budget submission includes sufficient funds to complete extensive tests using the horizontal moving mold caster and the re-designed vertical test system acquired for research to support a pilot plant decision.

Question: Is the funding in your FY 87 budget sufficient to allow for a technologically sound decision on the process? What is the money in the FY 87 budget to be used for?

Answer: The FY 1987 budget request of $1.0 million includes the best estimate of funds to complete desired tests on both horizontal and vertical approaches. Six month initial test campaigns will be conducted on both the horizontal and vertical systems. Any need for additional characterization of system performance will be determined at that point, and accomplished after down time for refurbishment of equipment.

Question: How did you develop your FY 87 budget with respect to the Thin Strip Casting proposal? Did you extract it from the original Program Management Plan for the proposed five year program or did you discuss it with U.S. Steel/Bethlehem so as to develop the funding most appropriate to this new project scenario?

Answer: The original management plan envisioned completion of the pre-pilot phase, pilot plant design, and initial purchase of pilot plant equipment with FY 1987 funds. Given a significantly reduced total budget for the Office of Industrial Programs, the decision was made to include only the funds necessary for completing the pre-pilot plant phase. FY 1987 budget decisions were, of course, not discussed with the contractor during budget preparation. However, they are consistent with the total costs projected to complete Phase I (pre-pilot plant) and the total funds obligated by DOE through FY 1986.

Question: U.S. Steel/Bethlehem believe that the original Program Management Plan planning is not relevant to the proposed new non-pilot-plant project and that $4.3 million is required from DOE in FY 87 to ensure that a logical decision point is reached at the end of the prepilot phase. What is your opinion?

Answer: U.S. Steel/Bethlehem has not yet formally submitted its revised Phase I budget, reflecting deletion of the vertical dynamic simulator and addition of a vertical test rig and a scaleable nozzle development. We agree that the original management plan will have to be updated. That will be accomplished subsequent to receipt of the contractor's modified plan and negotiation of changes. In a recent telephone conversation, U.S. Steel's program manager outlined three possible options for completing Phase I activity. The most expensive would require $3 million beyond what DOE has already obligated.

Question: U.S. Steel/Bethlehem's logic in developing this $4.3 million estimate was that with no contingency available from future funds (as would be the case in the current five-year project), the FY 87 plan must be based on operating both small prepilot casting machines throughout FY 87. They do not believe that the "best-case" planning in the current Program Management Plan (which only recognized two months of casting on one small caster in 1987) is valid for the new non-pilot-plant proposed project. What is your opinion?

Answer: We agree that two months of tests on pre-pilot equipment would be insufficient. However, FY 1986 funds already obligated are expected to support testing through January 1987, according to the U.S. Steel/Bethlehem program manager. Funds from the FY 1987 budget should be sufficient to complete all test campaigns on both the horizontal and vertical systems, and will certainly support all Phase I (pre-pilot plant) operations required throughout FY 1987.

Question: The pilot plant originally planned for the second phase of this project was to investigate technical scale-up issues (notably casting width and casting time) and was in no way a demonstration plant. Why do you now believe you can eliminate it from the project?

Answer: The decision to eliminate the pilot plant phase is based purely on fiscal considerations, not technical merit. Given an office budget of $15.6 million, funding the pilot plant would require termination of other projects throughout the office which also have high risk and the potential for substantial energy savings, and are in earlier stages of development.

Question: Competitive thin strip projects (notably in Japan) will obviously be delighted that the U.S. is curtailing its own research in this area. Are you concerned about this?

Answer: Yes. Continuation of thin strip research programs by the U.S. private sector is certainly desirable. As a matter of fact, various U.S. companies, including Bethlehem, are currently investing in development of thin section casting processes without Federal funding.

Question: What did you request for thin strip casting from OMB?

Answer: The request to OMB for funds in the materials processing program area - used primarily for funding thin section casting research - was $9 million.

Question: What did the original five year plan envision as a funding level for FY 1987?

Answer: The original plan anticipated FY 1987 funding of approximately $7 million for the US Steel/Bethlehem cooperative agreement.

Question: I am curious about the status of the FY 86 funding for the thin strip casting. As I recall we appropriated $8 million which would have been reduced somewhat by the 6/10 of a percent cut taken in conference, and the subsequent Gramm-Rudman cuts. However, I do not believe this would total $3 million and I understand from U.S. Steel and Bethlehem that they have only received $5 million. Could you explain that discrepancy?

Answer: The $8 million was for the program area, "Materials Processing." While the U.S. Steel/Bethlehem thin strip casting project is by far the largest project in this area - and in the entire office - we never intended to convey an impression that $8 million would be solely for that purpose. For example, funds for the Westinghouse/Armco steel strip casting contract are also included in that program area. Making determinations on the most important program requirements is a dynamic process, within the funding parameters established in Congressional committee reports for each budget sub-program. It is our understanding that the $5 million provides funding of the U.S. Steel/Bethlehem agreement through January 1987. Obligating additional funds would mean foregoing other valuable research projects, and seems imprudent to us.

Question: Is the thin strip casting process one you would consider high risk?

Answer: Yes. In fact, we have heard that at least one leading foreign steel company has abandoned research on technology similar to that being developed under the U.S. Steel/Bethlehem agreement, after making a substantial investment.

Question: Would you consider the thin strip casting work to be in the National interest?

Answer: Development of a technically and economically feasible thin strip casting process would clearly be in the National interest. Capital and energy costs of steel production could be significantly reduced.

Question: If DOE discontinues their involvement do you believe the private sector will carry it on independently?

Answer: The level of private sector activity in strip casting research would suggest that such work would be carried on independently.

Question: If the project is terminated as you propose, what will you have gained? Will DOE's investment be wasted?

Answer: Information needed to support a decision on pilot plant construction, and the data for design and engineering of such a plant, will be available when the project is terminated. DOE's investment will therefore not be wasted. This specific issue was of utmost importance in determining the program mix at various potential FY 1987 budget levels.

Ceramics R&D

Question: Throughout the DOE budget what do you estimate is our total investment in ceramics R&D?

Answer: It is estimated that the total funding for structural ceramics R&D throughout the FY 1987 DOE budget amounts to approximately $19 million. There is additional work supported within DOE which is focused on ceramics research for unrelated applications such as nuclear power and electronics, and although this support may be substantial, it does not have application to structural ceramics requirements.

Industrial Waste Utilization

Question: According to your budget justification (pp. 41) industry appears interested in your work on industrial waste utilization and if "the 6 million Btu/Hr tests are successful, work will proceed on transferring the technology to them for a pilot scale test." What industries have indicated a willingness and have any of them indicated they would be willing to run the pilot?

Answer: Two industries have indicated interest in the technology. They are Black Hills Power, Rapid City, SD (electric utility) and the Linde Division of Union Carbide (oxygen supplier). Both have indicated interest in participating in the 6 million Btu/hr test stage however, their commitment to the pilot scale test will not be made until the test results are available from the 6 million Btu/hr test.

Industrial Program Direction

Question: Your program is cut in about half from the FY 85 level yet you request an increase in program direction in FY 87 over FY 85 levels. Why is that?

Answer: The relatively small increase in program direction for the Industrial Program from FY 1985 to FY 1987 of $37,000, or approximately 2 percent, while the program is cut approximately 50 percent, reflects the need to maintain a stable, effective staffing level.

Technology Transfer

Question: Your budget (pg. 45) says you will continue to support, at a reduced level, selected industry, association and professional society conferences. What industries? What is the nature of DOE support for these initiatives?

Answer: Industry, association and professional society conferences that coincide with program objectives, particularly from a technology transfer standpoint, will be supported. This includes, but is not limited to, the energy intensive industries which are the focus for many of our R&D projects (e.g. primary metals, pulp and paper, textiles, food processing, and chemicals). This support will take the form of DOE's limited cosponsoring of conferences, providing speakers to present technical papers, and, where appropriate, hosting technology transfer, workshops and conferences.

Question: You generally highlight the importance of technology transfer. Why then is your request for this activity in the industrial program cut by $814,000?

Answer: Technology transfer activity is expected to be somewhat less in FY 1987 due mainly to the fact that there will be less R&D activity in industrial conservation. By concentrating our technology transfer activities on fewer projects, and by encouraging more private sector involvement in the technology transfer process, we expect to be able to operate the program at a reduced funding level.

Automotive Gas Turbine Program

Question: According to your budget (pg. 52) "although the Automotive Gas Turbine Program (AGT), to be completed in FY 86, will demonstrate the feasibility of the engine concept, further research and development on ceramic components processing and reliability is required before industry will consider the engine for commercialization." Is there money in the FY 87 budget for this activity?

Answer: The FY 1987 budget request includes $4.0 million for initiation of a program with one of the AGT contractor teams to continue development of ceramic components. The program will utilize the engines fabricated under the AGT effort to test and evaluate developed components.

Question: What did your budget request to OMB include for the Automotive Gas Turbine program?

Answer: The budget request to OMB included $5.0 million for the Automotive Gas Turbine (AGT) program. These funds were directed towards continued ceramic component development by one of the AGT contractor teams.

Question: If possible, would DOE prefer to keep two contractor teams involved in ceramics development activities?

Answer: While it is true that the involvement of two contractor teams in ceramics development activities would have a higher likelihood of success, it is also true that the single contractor team approach will support program goals while exercising budgetary constraint. If both contractor teams increased their cost sharing to the point where both could be involved in ceramics development activities at the funding level included in the budget, DOE would certainly be in agreement.

Question: Last year in response to a question I asked about the need for two contractors you said it was "expected to minimize the technological risks and improve the likelihood of the program's success." Why have you changed your mind?

Answer: There has not been a change in our position regarding the value of having two contractor teams working on ceramic component development. Even though retaining both contractor teams in the follow-on program would enhance the probabilities for success, budget considerations have necessitated limiting funding to the costs associated with supporting one contractor team with probable cost sharing.

Question: Do the benefits of ceramics extend beyond the automotive industry? If so, what are the other significant applications?

Answer: Although the Ceramics Technology for Heat Engines program concentrates on the benefits to be derived from the high temperature, reduced friction, lower weight and inertia properties of ceramics, these same properties will benefit a wide variety of applications beyond the automotive industry. Some of the potential uses for structural ceramics include wear parts such as seals, bearings, valves, nozzles, liners, pads, gates, and slides; cutting tools and tips; abrasives; corrosion resistant parts such as piping and gasifier components; heat exchanger components for use in metal-melting furnaces, and incinerators; non-engine missle parts such as radomes, structures and control valves; gun barrel liners; and propulsion systems for aircraft and military missles and vehicles.

Question: What would be the cost if we continued the Automotive Gas Turbine program as intended with two contractors?

Answer: The cost to continue the Automotive Gas Turbine program with two contractors is estimated to be between $8 million and $10 million depending on the industry cost-sharing negotiated.

Technology Transfer Activities

Question: You are again proposing to eliminate technology transfer activities, why?

Answer: Technology transfer activities have not been eliminated. Such activities will be reduced in relation to the overall R&D programs being conducted, and will be included as part of those programs.

Stirling Engine Program

Question: Your budget (pg. 52) says the Stirling Engine program will be concluded in FY 86 and the program results and experimental engines will be made available to industry. Has industry indicated they will continue the work without the government involvement?

Answer: To date the automotive industry has shown no interest in continuing development of the Stirling engine. However, the "proof-of-concept" data which will include all engine designs and test information for both the MOD I and MOD II should provide industry with all of the information necessary to decide whether further commercialization efforts should be carried out. Such efforts, including finalization of a MOD II production design, should be left to industry.

Question: Given your proposed deferral of the FY 86 money, what will the government have for its investment, or will our current investment be essentially wasted?

Answer: Early completion of the Stirling engine program in FY 1986 would not waste invested funds since sufficient testing of the MOD II prototype engine will have been conducted to supply industry with the necessary data for evaluation of the end product. MOD II does not represent a single "end product" for a $130 million program--all previous phases of the work have been extensively tested and the contractor has gained substantial engineering knowledge. In addition, the MOD II designs and all of the MOD I equipment and data will be available for industry's use in deciding whether further commercialization efforts should be carried out.

Ceramic Technology Program

Question: Your budget (p. 53) says some new research projects will be initiated. Why would you propose to initiate new projects when you are essentially terminating all the on-going work the transportation program is involved in? What are the new projects?

Answer: The new research projects discussed in the budget refer to activities under our ceramics technology program. The budget request for this program area for FY 1987 is $6.5 million compared to an FY 1986 appropriation of $8.8 million. Although some scale-up efforts for specific research areas have been eliminated, two new research areas are planned. One project involves research on processing of monolithic silicon nitride components and the other project involves life prediction methodology for ceramic composites.

Question: Would these new projects be in-house research efforts?

Answer: Neither project would be an in-house research effort. The monolithic processing project is planned as an industry effort, and the life prediction project is planned as a university effort.

Multi-Sector

Question: According to your budget justification (pg. 59) the Energy Conversion and Utilization Technologies (ECUT) program assesses the current state of energy conservation technologies in foreign countries to provide a comparative assessment of U.S. efforts in important conservation technologies. Generally what is that assessment?

Answer: The ECUT effort to assess foreign technologies is a new thrust, initiated in FY 1985 after some specific assessment study was completed. The initial efforts focused on Japan and suggested the need for similar efforts for focus on the European nations, to be initiated in FY 1986. To date, the ECUT program has assessed the technical strengths and information flow of energy conservation research in Japan. The study explored the status of research and technology developments in Japan and the ability of U.S. researchers to keep abreast of Japanese technical advances. Ten technology areas were examined: amorphous metals, biotechnology, ceramics, combustion, electrochemistry, heat engines, high-temperature sensors, heat transfer, thermal and chemical energy storage, and tribology.

The study revealed that significant technological challenges to the U.S. are in the areas of amorphous metals, biotechnology, and ceramics. Also, significant research and development momentum was noted in the area of stationary Stirling engine development. The general view of the U.S. research community is that the strength of the Japanese efforts is in applied rather than basic research. The feeling is that the Japanese often rely on the basic research of other nations and will generally repeat another nation's work to establish their own data base.

Details of this first assessment are documented in a report titled, "Assessment of Technical Strengths and Information Flow of Energy Conservation Research in Japan," September 1984.

With a recent resurgence of interest among the European community to collaborate their research efforts, coupling the government and industry interests, it appears certain that the U.S. must remain abreast of their progress, particularly in view of the fact that many European researchers have been exposed to the significant U.S. research activities. In that light, generally it can be said that the U.S. continues to lead in many areas, but that position may be seriously challenged in the near future.

Question: Are there any areas in which we are considered far ahead of other countries?

Answer: The ECUT efforts to compile the information required to complete a comparative assessment have only just begun. However, it can be safe to state that there are areas in which the U.S. is considered ahead of other countries. For example, the U.S. is considered the world's leader in applied combustion research, with the emergence of a center of excellence at the Combustion Research Facility at Sandia Laboratories, Livermore. The Combustion Research Facility and its activities are seen as models to the free world.

A more complete answer will be available in preliminary by the end of FY 1986.

Question: Any in which we could be considered far behind?

Answer: Our assessment of energy conservation research in Japan revealed that the Japanese are very strong in amorphous metals, biotechnology, and ceramics, and we are aware of similar strengths for ceramics development in Europe. However, at this time we do not have sufficient information to make this comparison. A more complete answer will be available in preliminary by the end of FY 1986.

Question: Would your proposed FY 87 budget put us far behind in any areas?

Answer: It is difficult to evaluate the specific impact of reduced funding on long term projects, characteristic of ECUT work. Most of the reduced funding appears in stretching out what are already long term projects (3-4 years duration) by about 3-6 months. The impact of this budget will be more measurable after a year's effort at the reduced level.

Question: According to your budget (pg. 60) a Al_2O_3 ceramic composite developed through DOE research efforts is now being sold commercially. Is DOE sharing in the profits? If so, at what rate?

Answer: No. Not yet. DOE currently holds the patent rights and is in the process of waiving them to Martin Marietta Energy Systems, Inc. which is seeking licenses with several (approximately 10) private firms including Greenleaf Corporation of Saegertown, Pennsylvania, which is currently marketing the material as cutting tools. The rates are considered proprietary information by the firms.

Question: DOE research also resulted in the commercial marketing of a technique to produce ceramic powders in a rotary kiln. Are you sharing in the profits of this effort? If so, at what rate?

Answer: No. The commercial firm, Advanced Refractory Technologies, Inc. of Niagara Falls, New York, presently claims that they developed the process in parallel to ORNL's work and, therefore, claim their own patents. To date, Martin Marietta Energy Systems, Inc. Patent Counsel has not reviewed the patent situation to see if there are any infringements on either side.

Question: According to your budget (pg. 69-70) you are interested in gaining the support of the private sector in setting up a computer information system for tribological data. You proposed for government sponsorship to last for three years at which time the system would be fully supported by the users. Has industry indicated a willingness to participate?

Answer: Yes. At the Industrial Research Institute Workshop on Wear-Life Prediction in Mechanical Components on January 22-23, 1985, the need for a tribological data retrieval system was given the highest priority of the research topics proposed. Dr. Frederick F. Ling of Rensselaer Polytechnic Institute, editor of the workshop proceedings, wrote:

"...that the need for data bases was voiced by all the Workshop Groups and that the community of tribological experts is not a large one so far. As such, the United States can afford to have a dozen or so of the experts, at the peak of their professional lifetime, convened for the purpose of digesting and adding information to the data base at a Tribological Information Center. In the information age, literally at the touch of a button, texts, graphs, equations, and numbers can be made available. Information should also include lists of consultants, lists of all tribological material component vendors and lists of laboratories and the specialities." (p. vi-vii)

Question: If so, which industries?

Answer: In addition to verbal support from the Industrial Research Institute, the American Society of Mechanical Engineers and the American Society of Lubrication Engineers have volunteered time and their own funding to support this endeavor, if DOE follows through with funding. Major automotive and ball bearing industries have indicated willingness to provide their design codes to the data system. Code developed as part of DOE contracts would also be included in the data base.

Question: Given DOE's recent track record of backing away from projects they have supposedly supported what assurances does industry have that the federal commitment will be there for three years?

Answer: Industry has been cautioned that this project is subject to availability of funds, as are all Government projects. However, it has been given an extremely high priority in ECUT for several reasons: (1) it can help make U.S. industry more competitive, (2) it is a project whose time has come, and (3) when turned over to the private sector for operation, it can be used to start a small business or expand the scope of a technical society.

State and Local Assistance Programs

Question: As a result of the Exxon case and other cases that will be settled in FY 1987 what amount of money do you estimate will be available to the states for these programs in FY 87?

Answer: $2.1 billion was just disbursed to the states from settlement of the Exxon case. Another estimated $750 million is pending in the Stripper Well case, which is close to settlement. These funds, of course, are available for DOE's four state grant programs and the Department of Health and Human Services' Low-Income Home Energy Assistance Program (LIHEAP). In addition, an appropriation of $2.1 billion is being requested for LIHEAP in FY 1987.

Question: How does this compare with what was provided last year through direct appropriations?

Answer: Approximately $252 million was appropriated for the four DOE programs in FY 1986. Approximately $2.1 billion was appropriated for HHS's LIHEAP Program.

Question: In response to a question I asked last year concerning weatherization, you pointed out that actual energy savings that result from weatherization are likely to be 30-50 percent less than anticipated. I had never heard this statistic before, but wouldn't this appear to be a good justification for discontinuing federal funding of the weatherization program?

Answer: The justification for discontinuing federal funding for weatherization is that this is no longer an appropriate federal activity, especially in light of the fact that sufficient resources have been made available from other sources. The innovative financing demonstrations and energy related business development grants funded by DOE demonstrate that such local resources are available. However, your point regarding the limited effectiveness of these programs is another reason for discontinuing the program.

Question: Your budget justification also points out (pg. 78) that 23% of the weatherized homes actually increase their energy use after weatherization. Again is this one of the reasons you are proposing to eliminate federal funding for this activity?

Answer: The evaluation findings you referred to point out how occupant behavior impacts the actual savings achieved through weatherization. DOE has evaluation work in process that will provide us additional information on these programs.

Question: One of the examples of a project funded under the Energy Extension Service involves an Energy Employment Training Program that provided employment training in an energy-related industry. How is that conservation related and is that an appropriate use of federal funds when dollars are so scarce?

Answer: The Massachusetts Energy Employment Training Program recruits low-income urban and minority heads-of-households to train as entry-level heating, ventilation, and air conditioning technicians. The major component of the training program focuses on energy efficient techniques and technologies. The EES legislation provides each state the latitude to carry out energy education programs that meet the particular energy needs of that state. The training of HVAC technicians in energy efficient techniques and technologies is allowable under the EES law and regulations.

Question: According to your budget (pg. 86) the Schools and Hospitals program has taken the initiative in identifying and developing alternative approaches to promoting energy conservation in the institutional sector. What are those alternatives?

Answer: The Institutional Conservation Program (ICP) has funded numerous initiatives to help institutions obtain private financing to make energy efficiency improvements in their buildings. Examples of these demonstrations include:

o Analyzing alternative financing arrangements to determine applicability and common characteristics for use by local governments, local K-12 school districts, colleges, and hospitals;

o An American Hospital Association Analysis of financing and contractural arrangements offered by savings-based financing firms;

o Demonstration for ways to find private financing through group financing, shared savings arrangements, and other non-federal non-grant sources of capital for applicants to the ICP grant program that have not received grant funding;

o Alternative financing demonstrations in small and low resource colleges and universities; and

o Clearinghouse on energy financing partnerships and documents on alternative financing to states, local governments, and institutions.

Question: Do most states have an Energy office.

Answer: All states have an energy office within the state government structure. In some states, the office is located within the Office of the Governor, in others, it may be within one of the operating departments of the state such as Economic Development or Natural Resources. In a few states the energy programs are a division within the state utility commission. However, every state and territory has an organization charged with the responsibility of managing the state energy programs.

Question: Is the work of the Energy Extension Service at all duplicative of the National Appropriate Technology and Assistance Service program?

Answer: No, the work of the Energy Extension Service (EES) does not duplicate that of the National Appropriate Technology Assistance Service

(NATAS). EES utilizes and coordinates the services of NATAS as well as other informational services and provides a network for the distribution of information produced and made available through NATAS. NATAS also provides technical assistance to the states for a wide range of small scale energy technologies.

TUESDAY, MARCH 11, 1986.

FOSSIL ENERGY RESEARCH AND DEVELOPMENT

WITNESSES

DONALD L. BAUER, ACTING ASSISTANT SECRETARY FOR FOSSIL ENERGY

JEREMIAH E. WALSH, JR., DEPUTY ASSISTANT SECRETARY FOR MANAGEMENT, PLANNING AND TECHNICAL COORDINATION

OPENING REMARKS

Mr. MURTHA. The committee will be in order.

Mr. Secretary, if you will introduce your colleague, and your statement will appear in the record. We are glad to have you before the committee, with your expertise and long experience with the department.

Mr. BAUER. Thank you, Mr. Chairman. I have with me this morning at the table Mr. Jeremiah Walsh, Deputy Assistant Secretary for Management, Planning and Technical Coordination, and seated behind me are other members of my staff who can assist me in answering more detailed questions.

FOSSIL ENERGY'S BUDGET

Mr. Chairman, the administration's proposed budget for Fossil Energy Research and Development is $150.1 million in total budget authority. This request was fashioned from the same fiscal principles and goals that make up the President's overall budget submission, a budget submission that meets the targets imposed by the Gramm-Rudman-Hollings legislation.

The Fossil Energy budget request would maintain adequate spending levels for those functions that would not otherwise be pursued by the private sector, i.e., generic, high-risk, long-term research.

It ensures that adequate funds are available for research that truly benefits the general population—for example, Federal assistance for technologies that can economically manage the environmental impacts of fossil fuels. But perhaps more important is the fact that by reflecting the administration's commitment to fiscal constraint the fossil budget request will contribute its share in bringing the Federal spending under control.

The $150 million budget authority is offset by $67 million in prior year funds, including construction program transfers, so the total budget authority is approximately $83 million. The budget request includes a new initiative for Cooperative R&D Ventures in Fossil Energy. This approach would be used in the applied research area, focusing upon general categories of extraction-related technologies that we believe will attract significant industrial interest.

These technologies—at least initially—include Unconventional Gas Recovery, Enhanced Oil Recovery, Oil Shale, and Underground Coal Gasification.

This initiative is intended to give the private sector a greater role in establishing Federal R&D priorities. It will help us ensure that tax dollars are applied to those research efforts that are most relevant to the trends and objectives of the marketplace. It will leverage the taxpayer dollars. It will also help in transfer of the technology to the marketplace.

I recognize that the details of this initiative are not fully developed, and in the detail that one would like to have in the budget, but that is being developed now, and we commit to working with Congress very closely on this approach as we initiate it.

CLEAN COAL TECHNOLOGY PROGRAM

In addition to that, the department is carrying out the congressionally mandated Clean Coal Technology Program, budgeted at $397.6 million for fiscal years 1986, 1987, and 1988.

On February 17, the department issued a "Program Opportunity Notice" which outlined the program's objectives, the evaluation criteria, and the information required for the people to respond to the solicitation. The responses to that solicitation are due by April 18, and selections will be made on or before August 1st. When that Clean Coal Program is completed, the projects it will have financed are expected to provide the technical, economic, environmental, health and safety, and operational information at a sufficient scale to see those going to the marketplace. Of course, that is a decision of the private sector, but I believe that they will be in a position to go on and be commercialized.

That completes my opening statement, Mr. Chairman. I will be pleased to answer any questions.

[The statement of Mr. Bauer follows:]

Statement of Donald L. Bauer
Acting Assistant Secretary for Fossil Energy
Department of Energy
Before the
Committee on Appropriations
Subcommittee on Interior and Related Agencies

FY 1987 FOSSIL ENERGY BUDGET REQUEST

On February 5, 1986, President Reagan sent to the U.S. Congress his proposed federal budget for fiscal year 1987 -- the first budget submitted in the Gramm-Rudman-Hollings era.

Contained within the Administration's proposed budget is a request for $150.1 million in total budget authority to continue fossil energy research. The request -- part of approximately $1.82 billion proposed by the Energy Department in FY 1987 for energy research and development -- embodies many of the same fiscal principles and goals as the President's overall budget submission.

It maintains adequate spending levels for those functions that would not otherwise be pursued by the private sector, i.e., generic, high-risk, long-term research. It ensures that adequate funds are available for research that truly benefits the general population, i.e., federal assistance for technologies that can economically manage the environmental impacts of fossil fuels. It continues to build a broad base of scientific data that will help shape the fossil fuel technologies of the 21st Century.

But perhaps most importantly, by reflecting this Administration's commitment to fiscal constraint, the FY 1987 Fossil Energy budget request will do its fair share in helping to bring federal spending under control and removing the last remaining obstacle to a future of continued economic growth.

Specifically, the Administration's FY 1987 budget request for Fossil Energy Research and Development can be summarized as follows:

	Budget Authority	
Coal	$ 82.227 million	
Petroleum	9.890 million	
Gas	5.252 million	
Program Direction & Management Support	40.221 million	
Cooperative Venture Pool	12.500 million	
Subtotal		$ 150.090 million
Prior Year Offsets	- 64.811 million	
FE Construction Transfer	- 2.075 million	
Appropriation Transfers	- .437 million	
Subtotal		$ -67.323 million
TOTAL (new Budget Authority)		$ 82.767 million

DEFERRALS AND OTHER OFFSET/TRANSFERS

As the above table shows, the Energy Department is proposing to conduct a fossil energy research program in FY 1987 at a total funding level of slightly more than $150 million. However, this budget figure can be significantly reduced in line with the Administration's funding priorities by applying currently unspent funds principally from those added in FY 1986 during the Congressional appropriations process. These proposed deferrals are associated with the following programs (FY86 proposed deferral amount is in parentheses): magnetohydrodynamics ($13.130 million), fuel cells ($22.056 million), surface coal gasification ($ 8.008 million), coal liquefaction ($ 6.329 million), control technology and coal preparation ($ 4.875 million), advanced research and technology development ($ 2.096 million), combustion systems ($ 0.951 million), heat engines ($ 1.428 million), oil shale ($ 2.856 million), program direction and management support ($ 0.476 million).

In addition to the proposed deferrals, the FY 1987 fossil energy budget can be further offset by applying appropriation transfers of $2.075 million in unspent funds from prior year construction projects and $0.437 million in fees previously deposited in the "Energy Security Reserve" for guarantees of obligations for the Great Plains Coal Gasification Project.

COOPERATIVE R&D VENTURES POOL

The FY 1987 budget request includes a new initiative for a cooperative R&D venture approach in fossil energy. This new approach would be used in the applied research area, focusing upon general categories of technologies that are sufficiently mature to attract significant industrial interest.

In FY 1987, the Fossil Energy program proposes to make available $12.5 million for an initial phase-in effort that will help us to determine the best strategy for applying the cooperative venture mechanism, to stimulate interest within different parts of the energy industry, and to develop practices that will help us realize, as much as possible, the benefits of this approach.

Initially, the Fossil Energy program will confine the cooperative R&D venture pool to extraction-related technologies, such as:

- unconventional gas recovery
- oil shale processing
- enhanced petroleum recovery
- underground coal gasification

The program will also be open to other R&D concepts applied to U.S. deposits of oil, gas and shale that might be brought to the Department for consideration.

We recognize that there may be some initial reluctance in the marketplace to shift toward a different funding approach for industrial performed energy R&D. But that should not argue against the increased economic efficiency, market penetration, and more effective technology transfer offered by an improved funding mechanism. The cooperative venture initiative is intended to give the private sector a greater role in establishing federal R&D priorities. It will help ensure that tax dollars are applied to those research efforts that are most relevant to the trends and objectives of the marketplace. It will assist in the transfer of taxpayer-supported technology from the government to industry. And it will provide greater leverage for federal funds by increasing private sector cost-sharing.

The Department will not place tight constraints on the types of cooperative opportunities to be considered. As currently envisioned, however, the proposed program would solicit proposals with the following common characteristics:

- o DOE will be a minority funding partner with at least two other industrial partners; the federal share will provide a maximum of 49 percent of the total funding for the venture;
- o Assurance must be available that federal funds will not be displacing private sector funds;
- o The taxpayer must be able to share in royalties or other profits from the venture, consistent with the government's funding contribution;
- o Preference will be given to companies with a proven record of successfully obtaining and managing co-funding from private sources.

We recognize that additional details must be developed before this new initiative can be implemented. Therefore, we intend to work closely with Congress in developing a viable, effective venture pool approach that results in an efficient expenditure of tax dollars.

Further discussion of the FY 1987 Cooperative R&D Ventures Pool initiative can be found on pages 25-26 of this testimony.

CLEAN COAL TECHNOLOGY PROGRAM

In addition to the funds requested for conducting a basic and applied research program in fossil energy, the Department will also carry out the Congressionally-directed Clean Coal Technology Program, budgeted at $397.6 million for fiscal years 1986 through 1988.

On February 17, 1986 the Department issued a "Program Opportunity Notice" outlining the program's objectives, the evaluation criteria and the information requirements for prospective proposers. In accordance with Public Law 99-190, which made the funds available, the Department will require a minimum of 50 percent sharing of project costs by the private sector. The Department will also require that such cost sharing be on a dollar-for-dollar basis as expended during each phase of the selected projects. To ensure the broadest spectrum of cost-shared clean coal projects, the Department will accept proposals in all energy market applications. As required by P.L. 99-190, proposals are due on April 18, 1986, and selection of prospective projects will be made on or before August 1, 1986.

When the Clean Coal Technology Program is complete, the demonstration projects it will have financed are expected to provide sufficient technical, economic, environmental, health and safety, and operational information at sufficient scale to enable the private sector to make rational commercialization decisions.

Additional details on the Clean Coal Technology Program can be found on pages 27-28 of this statement.

The following pages contain a more detailed description of the proposed FY 1987 Fossil Energy budget organized by major activity:

- COAL -

CONTROL TECHNOLOGY AND COAL PREPARATION

(Dollars In Millions)

		FY 1986			Percent Change from
ACTIVITY	FY 1985	Approp.	Revised[1/]	FY 1987	FY 1986
Operating Expenses	$34.8	$33.3	$31.9	$18.1	-43.3%
Deferral to Finance FY87	...	...	-4.9	...	...
Total	$34.8	$33.3	$27.0	$18.1	-33.0%

[1/] Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

Coal preparation is directed toward the development of advanced coal cleaning technologies that will reduce the ash and sulfur content of U.S. coals. The resultant product can be formulated into a high quality fuel that could replace oil and/or gas and reduce environmental emissions of suspected acid rain precursors from coal-fired power plants in both new and retrofit applications.

The FY 1987 coal preparation budget proposal of $6,443,000 provides funds to:

- Complete design of pre-proof-of-concept Gravimelt chemical coal cleaning system. ($1,000,000)
- Continue investigation of advanced concepts for chemically modified coals. ($1,300,000)
- Continue joint DOE/EPRI advanced coal cleaning development and test program. ($1,000,000)
- Continue research to optimize techniques for microbial removal of organic sulfur from coal. ($1,000,000)
- Continue ultrafine coal characterization and process economics. ($500,000)
- Continue in-house research on chemical coal cleaning, and fundamental organic sulfur chemistry. ($500,000)
- Continue laboratory scale research on advanced physical cleaning concepts. ($1,143,000)

Flue gas cleanup addresses the removal of pollution causing contaminants from the stack gases of conventional combustion units to meet environmental standards. Efforts will be focused on fundamental research for processes for the combined removal of NO_x, SO_x, and particulates, both for utility and industrial applications.

The FY 1987 funding request of $7,541,000 would:

- Complete proof-of-concept test and evaluation for low temperature dry hydrate and dolomitic lime slurry in-duct injection for acid rain precursor control technology process candidates. ($3,390,000)
- Continue research on advanced NO_x/SO_2 chemistry and bench scale advanced concept development. ($2,341,000)
- Continue fluidized bed copper oxide proof-of-concept test and evaluation. ($1,810,000)

Gas stream cleanup includes the technology for removal of contaminants from gasifier and combustor process streams prior to utilization in advanced power conversion cycles such as gas turbines and fuel cells. Both hardware and environmental protection are key concerns.

The $3,839,000 in funds requested for FY 1987 would:

- Continue alkali combustion chemistry research. Work will be performed by Midwest Research Institute in Kansas. ($350,000)
- Continue process modification R&D for trace contaminants. ($75,000)
- Continue R&D for sulfur removal with selected sorbents. ($788,000)
- Continue process modification R&D for direct-fired turbine. ($1,000,000)
- Complete on-line tests of remaining selected particulate and sulfur removal devices for turbine combined cycle. ($600,000)
- Continue test and evaluation of soot, particulate control, and trace contaminants. ($100,000)
- Continue basic research for physical and chemical cleanup for gasifier PFB and direct coal-fired turbines including instrumentation and control. ($926,000)

Waste management focuses primarily on waste sampling and characterization from coal preparation wastes. The FY 1987 funding request of $324,000 would:

- o Continue sampling and characterization and data acquisition of organic and inorganic compounds present in solid wastes and in their leachates. ($195,000)
- o Complete Phase I R&D for extracting energy from coal preparation wastes. ($129,000)

ADVANCED RESEARCH AND TECHNOLOGY DEVELOPMENT

(Dollars In Millions)

ACTIVITY	FY 1985	FY 1986		FY 1987	Percent Change from FY 1986
		Approp.	Revised 1/		
Operating Expenses	$30.8	$35.2	$33.8	$27.2	-19.5%
Deferral to Finance FY87	...	...	-2.1	...	...
Total	$30.8	$35.2	$31.7	$27.2	-14.2%

1/ Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

The Advanced Research and Technology Development Program is directed toward the scientific and technical areas that underlie the development of all fossil energy technologies. Included are fundamental studies to increase understanding of the mechanisms of direct coal combustion, generic studies of materials and components, and investigations of instrumentation concepts in environments associated with advanced coal technologies.

AR&TD differs from the Fossil Energy line programs; the latter have an end-item technology development orientation while AR&TD's mission is to pursue generic research in support of all Fossil Energy coal line programs.

The $27,224,000 requested for AR&TD would be applied as follows:

Direct Utilization ($9,415,000)

- Continue research on the determination of physical and chemical properties of uncombusted coals and combustion products. ($950,000)
- Continue support research on coal combustion science and IEA coal combustion science program. ($4,643,000)
- Continue research on deposition mechanisms and erosion caused by mineral matter in atmospheric, internal combustion, and pressurized environments. ($1,845,000)
- Continue research on separation mechanisms relevant to the coal fuel cycle, from coal beneficiation to the removal of environmentally deleterious products of combustion. ($1,127,000)
- Continue generic electrochemistry research and research on fundamental aspects of molten carbonate and solid oxide fuel cells. ($850,000)

Materials ($5,860,000)

- Perform mechanistic research necessary to allow development and use of new corrosion and erosion resistant alloys, ceramics and refractories for use in coal conversion and utilization systems. ($5,860,000)

Components ($1,593,000)

- Conduct studies on novel component concepts to mitigate erosion and wear in seals; and on slurry flow control devices. ($650,000)
- Conduct fundamental research at national labs and PETC on bulk flow modeling, solids-liquid rheology, and dense phase solids-gas flow; eliminate support for university research in solids transport. ($943,000)

Environmental Activities ($2,200,000)

- Continue analyses of issues associated with air and water quality, solid waste disposal, and toxic substances; continue support of occupational health and safety compliance services. ($1,550,000)
- Continue research conducted under ITFAP with reduced emphasis on quality assurance of data and analytical tools. ($650,000)

Technical and Economical Analysis ($2,000,000)

- Continue funding studies which support multi-year planning and FE strategy and program formulation, technical/economic assessment studies that crosscut a number of FE programs, and support of IEA/Coal Research Service. ($2,000,000)

Technology Base Synthesis ($800,000)

- o Continue analyses and studies to integrate and coordinate research and exploratory development activities, to identify advanced research needs, to support international collaborative research activities in FE, and to provide seed funding for new advanced research initiatives. ($800,000)

Instrumentation, Control and Diagnostics ($1,356,000)

- o Perform research on unique methods for measuring multiphase flow parameters such as velocity, solids content, and viscosity; and for identifying chemical species such as plasma spectrographic techniques. ($1,356,000)

University Coal Research ($4,000,000)

- o Initiate approximately 20 new university projects relating to coal science, environmental science, surface science, organic and inorganic chemistry of coal constituents and the mechanisms and kinetics of chemical reactions to gasification, liquefaction and combustion; encourage collaboration between university and industrial researchers. ($4,000,000)

COAL LIQUEFACTION

(Dollars In Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1986 Revised 1/	FY 1987	Percent Change from FY 1986
Operating Expenses	$31.1	$32.9	$31.6	$9.1	-71.2%
Deferral to Finance FY87	...	...	-6.3	...	...
Total	$31.1	$32.9	$25.3	$9.1	-64.0%

1/ Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

The Coal Liquefaction program is developing the scientific and engineering knowledge base which industry can use to bring economically competitive and environmentally acceptable synthetic liquid fuel technology into the marketplace when needed.

The FY 1987 budget request of $ 9,147,000 would be used as follows:

Advanced Research ($2,620,000)

- o Conduct exploratory efforts on novel coal liquefaction processes. ($200,000)
- o Continue research to improve the understanding of coal liquefaction including properties of coal, reaction mechanisms, utilization of hydrogen, and properties of coal liquids. ($1,120,000)
- o Continue research on biological approaches to coal liquefaction. ($100,000)
- o Continue research on novel catalytic approaches to coal liquefaction. ($450,000)
- o Continue research on the physical, chemical and thermodynamic properties of fossil fuel liquids. ($750,000)

Indirect Liquefaction ($2,539,000)

- o Continue catalyst research, study reaction mechanisms and more promising process concepts at PETC and with industry. ($2,539,000)

Direct Liquefaction ($2,996,000)

- o Continue in-house research of advanced process concepts at PETC while completing existing bench scale industrial projects. ($2,996,000)

Support Studies/Engineering Evaluations ($992,000)

- o Complete one existing industrial instrument research project. ($37,000)
- o Continue technology base research and an existing industrial research project ($955,000)

COMBUSTION SYSTEMS

(Dollars In Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1986 Revised 1/	FY 1987	Percent Change from FY 1986
Operating Expenses	$30.1	$30.3	$29.1	$9.2	-68.4%
Deferral to Finance FY87	...	...	-1.0	...	...
Total	$30.1	$30.3	$28.1	$9.2	-67.3%

1/ Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

The goal of the Combustion Systems activity is to increase the contribution of the nation's coal resources through the development of market-suitable combustion systems and fossil-derived fuels. The programs within the overall Combustion Systems activity are Atmospheric Fluidized Bed, Pressurized Fluidized Bed, Alternative Fuels and Advanced Combustion Technology.

The FY 1987 funding request of $9,169,000 would be used as follows:

Atmospheric Fluidized Bed Combustion ($1,590,000)

- Conduct in-house fluidization research in particle motion flow, erosion, bed internals and heat transfer surfaces. ($490,000)
- Initiate bench scale construction and testing of special AFB applications for the commercial/institutional and residential sectors. ($1,100,000)

Pressurized Fluidized Bed Combustion ($3,686,000)

- Continue ongoing program at New York University to evaluate PFB components and design changes to enhance performance and provide the basis for advanced concept designs. ($600,000)
- Continue research on PFB dynamics, systems analysis, and combustion characterization; continue technology and economic analysis assessments. ($586,000)
- Continue the follow-on test program to obtain POC on hot gas cleanup, coal/water slurry feeding, and performance of updated heat exchanger design. ($1,500,000)
- Complete Phase I systems definition studies including conceptual design and cost of a commercial plant. Initiate Phase II, development and testing of key critical process components. ($1,000,000)

Advanced Combustion Technology ($1,882,000)

- Continue development of the most promising of the light industrial, commercial and residential concepts selected including design, fabrication and testing. ($1,400,000)
- Continue in-house activities supporting advanced combustion technology systems. ($482,000)

Alternative Fuels ($2,011,000)

- o Complete detailed combustion and system characterization and technical, economic, and environmental assessments on selected existing residential boiler/furnance systems firing CLM/micro-coal fuels. ($2,011,000)

FUEL CELLS

(Dollars in Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1986 Revised 1/	FY 1987	Percent Change from FY 1986
Operating Expenses	$40.5	$35.4	$34.1	$5.0	-85.3%
Deferral to Finance FY87	...	...	-22.1	...	...
Total	$40.5	$35.4	$12.0	$5.0	-58.3%

1/ Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

The Fuel Cell program supports high risk, high payoff technology base development to assist private industry in developing hydrocarbon fuel conversion technologies. Fuel cells, which rely on an electrochemical reaction rather than combustion, can potentially increase the cost effectiveness, efficiency, and environmental acceptability of conventional and alternative hydrocarbon fuels.

No funds are requested in FY 1987 for phosphoric acid fuel cell systems. The objective for this program will have been achieved by the end of FY 1986 and full responsibility for further development and application of phosphoric acid fuel cell technologies should be left to the private sector.

The technical feasibility of molten carbonate fuel cells operating at approximately 60 percent electrical conversion efficiency (natural gas to busbar) has been forecasted by single cell testing. The complexity and associated capital costs of advanced fuel cell systems are projected to be less than those for first generation phosphoric acid fuel cell systems. The $3,400,000 requested for the molten carbonate fuel cell will be used to:

- o Continue development of external and/or internal reforming molten carbonate stacks. ($2,600,000)
- o Continue technology base research on cell components and corrosion resistant materials. ($800,000)

The solid oxide fuel cell is an advanced, high temperature solid state fuel cell that offers promise in electric utility and in cogeneration applications in industrial and commercial sectors. Solid oxide electrolyte fuel cells have the advantage of solid state stability and have been projected to be more easily manufactured than other fuel cell concepts. The $1,600,000 requested for the Advanced Concepts fuel cell activity would:

- o Complete testing of a 5 kW solid oxide fuel cell module and continue development of a 25 to 200 kW generator. ($1,600,000)

HEAT ENGINES

(Dollars In Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1986 Revised[1/]	FY 1987	Percent Change from FY 1986
Operating Expense	$11.8	$12.8	$12.3	$7.9	-35.8%
Deferral to Finance FY87	...	...	-1.4	...	...
Total	$11.8	$12.8	$10.9	$7.9	-27.5%

[1/] Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

The goal of this program is to establish technical data which will enable the private sector to assess the commercial viability of coal-fueled power conversion systems. The program focuses on key technical problems associated with substituting coal or coal-derived gaseous fuels for distillate fuels or natural gas in gas turbine and diesel power conversion systems. The goal is to assist the private sector, through selected research efforts, in developing the technology needed for direct firing of coal, either dry or suspended in a liquid carrier, or a coal-derived gaseous fuel cleaned at minimal cost.

The $7,942,000 in requested funds for FY 1987 will be used as follows:

Gas Turbines ($6,394,000)

- o Complete first portion of the integrated systems test program. ($5,994,000)
- o Continue evaluation of coal-liquid mixtures in the gas turbine combustor test stand. ($400,000)

Diesels ($1,548,000)

- o Continue evaluation of coal-liquid mixtures in the diesel engine test facility. Initiate research activities related to the FY 1986 Program Research and Development Announcement for the coal-fired diesel engine integrated systems test validation. Complete technical and economic analyses and related experimental tests of the coal-fired diesel engine project. ($1,548,000)

UNDERGROUND COAL GASIFICATION (Dollars In Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1986 Revised[1/]	FY 1987	Percent Change from FY 1986
Operating Expenses	$ 5.7	$ 4.2	$ 4.1	$ ...	-100.0%

[1/] Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

Underground Coal Gasification (UCG) is a process for converting coal, in place (in situ), to a readily cleanable synthetic gas comparable to that produced from surface gasification systems. The energy for the process is derived from partial combustion of the coal (pyrolysis) resulting in the identical reactions that occur in aboveground gasification. The technical feasibility of underground gasification techniques applied to several types of coal resources has been proven. In FY 1986 and FY 1987 ongoing technology base activities will be phased out. In FY 1987 industrial-proposed applied research efforts will be candidates for the cooperative R&D venture pool.

Gasification Technology Development ($0)

- o Complete technology base development using prior year funds.

Environmental and Advanced Research ($0)

- o No activity.

MAGNETOHYDRODYNAMICS

(Dollars In Millions)

		FY 1986			Percent Change from
ACTIVITY	FY 1985	Approp.	Revised[1/]	FY 1987	FY 1986
Operating Expenses	$30.7	$28.9	$27.7	$ ...	-100.0%
Deferral to Finance FY87	...	...	-13.1	...	...
Total	$30.7	$28.9	$14.6	$ ...	-100.0%

[1/] Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1935 (Gramm-Rudman-Hollings)

The current MHD program continues the implementation of the June 1984 cost-shared multiyear program which provides for basic supporting research and the development of systems/subsystems which will provide proof-of-concepts needed for the advancement of the MHD technology to the retrofit stage.

No funds are requested for MHD research in FY 1987. The Department believes that the cost of continuing its MHD program is not affordable in light of current fiscal constraints. Other technologies can contribute more directly to the nation's energy security with lower investment requirements, in a more timely manner and with significantly more cost-sharing.

SURFACE COAL GASIFICATION

(Dollars In Millions)

		FY 1986			Percent Change from
ACTIVITY	FY 1985	Approp.	Revised[1/]	FY 1987	FY 1986
Operating Expenses	$35.1	$43.0	$41.3	$5.6	-86.4%
Deferral to Finance FY87	...	...	-8.0	...	...
Total	$35.1	$43.0	$33.3	$5.6	-83.2%

Specific programmatic goals of the Surface Coal Gasification Program are to: (1) advance the state-of-the-art of Surface Coal Gasification technology to optimize its potential for development of more viable or advanced gasification systems through the study of promising long term, high risk concepts, (2) identify and support those R&D efforts that will make available the full capabilities and processing flexibility of surface coal gasification systems as the key coal conversion technology directly applicable for generating alternative energy options from coal for every sector of the energy consuming marketplace, and (3) continue management and monitoring of the Great Plains Gasification project as necessary.

The $5,598,000 requested for FY 1987 would be applied to the following research efforts:

Advanced Research ($968,000)

- Continue research on the fundamental chemistry and reaction mechanisms associated with mild gasification and investigate the parameters that control product yield distribution. ($593,000)
- Continue research on the chemistry of ash and slag from coal gasifiers ($375,000).

Advanced Process Development ($1,689,000)

- Complete studies on advanced staged, concurrent rapid rate reactors to enhance data base on rapid rate pyrolysis. Continue characterization of char during devolatilization. ($309,000)
- Continue studies using coal based sorbents and zeolites in pressure swing adsorption for separation of gases. Continue development of low cost, highly selective permeable membranes for hydrogen separation. ($235,000)
- Continue operation of the advanced gasification concepts facility to generate data essential to advancing entrained gasification and hot gas cleanup technology. ($192,000)
- Continue theoretical studies on coal gasifiers and gasification systems needed for design of optimized systems. ($703,000)
- Redirect and continue essential studies leading to economic production, upgrading and use of new fuel forms. ($250,000)

Systems Engineering Concepts ($1,373,000)

- Continue to investigate parameters controlling the use of minimally cleaned gasifier coal products as fuels for advanced heat engines. ($50,000)
- Continue effort to develop more economical methods for production of oxygen in large quantities--advance the solid state zirconia system to the "process development unit" stage of study. ($350,000)

- Utilize results of studies on composite sorbents, mixed metal oxides, catalysts, etc. to establish reaction mechanisms by which gasifier performance can be controlled through use of in-bed/coal-feed additives. ($200,000)

- Continue key studies on integration of gasifiers/gasification technologies with other conversion systems to determine the most optimum configurations and on identification of problems requiring R&D effort to resolve. ($173,000)

- Continue to provide engineering analyses and systems evaluation capability for joint DOE/GRI Coal Gasification Program through monitoring processes, review of technical data and economic assessments. ($600,000)

- Continue the "process development unit" effort exploring issues limiting the integration and development of gasifier/advanced hot gas cleanup systems/turbines for the production of power. ($0) (Prior year funding)

Environmental and Engineering Analysis ($1,131,000)

- Continue the development of process modifications that will reduce the generation of trace hazardous compounds. ($375,000)

- Complete the study of novel approaches to use microorganisms for removing trace amounts of organic contaminants in waste water. (Prior year funding) ($0)

- Continue development of analytical models such that computer based systems analysis can be used to identify advanced gasifier systems--expand efforts to prepare environmental information for entry into the model. ($200,000)

- Investigate new and novel methods for sampling and analyzing organics, sulfur species, nitrogen, trace elements, etc., and study ways to reduce toxicity of oils and tars. ($186,000)

- Initiate comprehensive environmental sampling and analysis of systems employing hot gas cleanup systems. ($200,000)

- Initiate the environmental assessment of those processes found suitable for production of new fuel forms. Make recommendations on areas of study needed to minimize the impact of those mild gasification processes that produce liquids derived from coal. ($170,000)

Great Plains ($437,000)

- Continue management/monitoring of the Great Plains project as necessary. ($437,000)

- PETROLEUM -

ADVANCED PROCESS TECHNOLOGY

(Dollars In Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1986 Revised[1/]	FY 1987	Percent Change from FY 1986
Operating Expenses	$5.4	$5.7	$5.5	$1.8	-67.3%

[1/] Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

There are two goals within the APT Program. These are: (1) to pursue the fundamental research relevant to oil, gas, and shale recovery, i.e., development of the tools and techniques to measure and predict important properties and phenomena, and to obtain the fundamental data critical to these recovery processes; and (2) to provide the proper environment to conduct research and to pursue application of new frontiers of science and/or as yet unexplored new concepts to achieve quantum increases in recovery efficiency for oil, gas, and shale resources.

The $1,811,000 requested for this activity would be used as follows:

Advanced Exploratory Research ($1,576,000)

- Continue fundamental petroleum, geoscience and chemistry research focusing on physical and chemical characterization studies of heavy oil; thermodynamic measurements; shale oil and tar sands bitumen studies and fuel storage and handling. Work will be performed by the National Institute for Petroleum and Energy Research. ($1,500,000)
- Continue extraction related aquifer contamination studies. ($76,000)

Arctic and Offshore Research ($235,000)

- Continue the Arctic/offshore oil and gas research data base. ($235,000)

ENHANCED OIL RECOVERY

(Dollars In Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1986 Revised[1/]	FY 1987	Percent Change from FY 1986
Operating Expense	$11.7	$11.9	$11.5	$4.5	-60.9%

[1/] Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

The goal of the Enhanced Oil Recovery (EOR) program is to conduct generic technology base R&D activities; develop fundamental knowledge that can lead to improved and new process concepts; and to assist industry in obtaining a better understanding of the mechanisms and behavior of advanced and novel EOR processes for the recovery of presently unrecoverable light oil, heavy oil and tar sand resources. In addition to specific funding listed below, technology programs in this area will be eligible for support through the industry cooperative R&D venture pool.

Funding requested in FY 1987 totals $4,484,000, applied as follows:

Heavy Oil ($608,000)

- Continue studies of steam additive mechanics and variables affecting mobility control and sweep efficiency. ($608,000)
- Complete remaining joint research with Venezuela and Mexico using previous EOR technical base funds. ($0)
- Complete, utilizing prior year funding, final report on variables in alkaline flooding in EOR. ($0)

Light Oil ($3,876,000)

- Investigate high temperature, stable polymer systems and continue fundamental surfactant studies. ($1,150,000)
- Complete post-field test analyses of EOR field tests and continue reduced studies of geologic heterogeneities and other characteristics on EOR process shortcomings. ($1,100,000)
- Continue environmental study of microbial EOR processes. ($100,000)
- Conduct basic multi-phase flow wettability studies to understand EOR process mechanisms. ($700,000)

- o Continue studies of CO2 and other gas flooding concepts with emphasis on mobility control. ($826,000)

Tar Sands ($0)

- o No funds requested.

OIL SHALE

(Dollars In Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1986 Revised[1/]	FY 1987	Percent Change from FY 1986
Operating Expenses	$14.6	$12.6	$12.1	$3.6	-70.2%
Deferral to Finance FY87	...	...	-2.9	...	...
Total	$14.6	$12.6	$ 9.2	$3.6	-60.9%

[1/] Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

The goal of the Oil Shale R&D program is to provide a sound technologic basis for reduction of economic and environmental constraints to industrial development of the U.S. oil shale resources and to increase the amount of resource that may be used economically. The program is focusing on basic research using reference shales to systematically study the chemistry, kinetics, and emissions related to eastern and western shale processing. In addition to the specific funding listed below, technology programs in this area will be eligible for support through the industry cooperative R&D venture pool.

The $3,595,000 requested for FY 1987 would be used to support the following research:

Oil Shale Technology Base ($3,078,000)

- o Complete specific eastern shale research resulting from FY 1985 unsolicited proposals in the areas of hydroretorting and in situ processing. ($1,450,000)
- o Continue developing a systems analysis capability to enable assessment from mining to spent shale disposal. ($277,000)

- Continue experiments with reference shales in various generic solids recycle retort systems to provide data for modifying and developing chemical, physical, and economic models. Maintain reference shale bank activities including characterization and distribution of shales to program participants. ($1,201,000)

- Continue development and maintenance of an oil shale data base. ($150,000)

Environmental Mitigation ($517,000)

- Continue development of the environmental data base. ($50,000)

- Identify and quantify major and trace element emissions in gases, liquids and solids from reference shales as a function of process parameters such as time, temperature, shale particle size and composition, and retort gas composition. Continue analytical methods development as necessary. Support environmental research and health and safety research under international agreement with Israel and interagency agreement with Bureau of Mines. ($467,000)

- GAS -

UNCONVENTIONAL GAS RECOVERY

(Dollars In Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1986 Revised 1/	FY 1987	Percent Change from FY 1986
Operating Expenses	$10.1	$8.8	$8.5	$5.3	-37.6%

1/ Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

The specific objectives of the Unconventional Gas Recovery program are to: (1) reduce the uncertainty surrounding the potential magnitude of reserves of the unconventional gas resources and the conditions under which they will be produced; (2) develop and improve extraction technologies to the point of technical readiness for private sector development; and (3) transfer all technical and economic data to industry.

In addition to the specific funding listed below, technology programs in this area will be eligible for support through the industry cooperative R&D venture pool.

Eastern Gas Shales ($355,000)

- Continue development of the Eastern Gas Shale production technology base; also special geoscience investigations, system analyses, and technology transfer. ($355,000)

Western Tight Sands ($3,582,000)

- Conduct fracture stimulation research and production testing of remote lens at Multiwell Test facility. ($3,200,000)
- Continue supporting research modeling, systems analysis, and data base development. ($382,000)

Environmental and Advanced Research ($1,315,000)

- Continue resource identification and evaluation of gas hydrates and deep source gas. ($273,000)
- Continue lab analysis of hydrate core and modeling research. ($192,000)
- Conduct geochemical and geophysical diagnostic tests for gas hydrates on the North Slope of Alaska. ($650,000)
- Continue evaluation and development gas hydrate extraction/production techniques and data analysis of environmental assessments. ($200,000)

PROGRAM DIRECTION AND MANAGEMENT SUPPORT

(Dollars In Millions)

		FY 1986			Percent
ACTIVITY	FY 1985	Approp.	Revised[1/]	FY 1987	Change from FY 1986
Operating Expense	$46.2	$55.3	$53.2	$40.2	-24.4%

[1/] Includes reductions in accordance with P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings)

This activity provides funding for salaries, benefits and overhead expenses for the management of FE program at Headquarters, and the Energy Technology Centers:

The Headquarters staff is responsible for overall program direction which implements DOE policy and communicates that policy to the Energy Technology Centers, sets program objectives, develops program plans and evaluates alternative program strategies, develops and defends budget requests to the Office of Management and Budget and to the Congress, approves procurement plans, monitors work progress, evaluates projects, and approves revisions in work plans as required to attain program goals.

The Energy Technology Centers support day-to-day project management functions for assigned programmatic areas including contract and National Laboratory monitoring, development and maintenance of project budget, and procurement plans, and other activities related to program and site support.

The Office of the Federal Inspector for the Alaska Natural Gas Transportation System is responsible for coordinating all Federal activities pertaining to the pipeline in order to assure timely, efficient, safe, and environmentally sound construction including the assessment of developments in the world energy market, specifically the U.S. and Canadian oil and gas situation as they affect the Alaska Natural Gas Transportation System.

The $40,221,000 requested for FY 1987 would support the following activities:

Headquarters Program Direction ($11,260,000)

- Provide funds for salaries, benefits, and travel for Headquarters staff and overhead expenses generic to the entire FE program, including SBIR assessments. ($11,260,000)

ETC Program Direction ($28,740,000)

- Provide funds for ETC indirect costs and for site support. ($28,740,000)

Federal Inspector for the Alaska Natural Gas Transportation System ($221,000)

- Continue technical reviews of ANGTS design and/or remobilization packages. ($36,000)

- Complete long-term Frost Heave research using prior year funding. ($11,000)

- Continue development and refinement of Remobilization Encyclopedia. ($10,000)

- Continue to assess developments in U.S. and Canadian energy markets, and gas exploration and transportation projects in reference to ANGTS. ($33,000)
- Continue to maintain liaison with project sponsors, producers, other Government agencies, State of Alaska and Canadian Government. ($26,000)
- Salaries and related expenses for administrative and support functions. ($105,000)

COOPERATIVE R&D VENTURES POOL

(Dollars In Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1986 Revised	FY 1987	Percent Change from FY 1986
Operating Expense	$ ...	$ ...	$ ...	$12.5	+100.0%

The goals of the industry cooperative R&D venture pool are to increase the market relevance and penetration of federally funded applied R&D, to increase private sector leverage of federal funds, and to ensure that taxpayer-supported work in industry will benefit the industry and economy at large and not just a single company.

The vehicle for achieving this will be industry formed cooperative R&D ventures. The core of such ventures would be several private firms with at least two from the same industry (that is the distinction between a "cooperative venture" and a "joint venture"). The structure should, however, allow other parties such as investors, universities, institutes, and public laboratories to participate in the partnership as well.

The principal objectives of the program are to:

- Implement a process by which industry will join with Government in applied research and development activities that will result in products, processes, and technology that will contribute to achieving the energy and technology goals of the United States.
- Reduce and/or eliminate traditional barriers that have limited the financial and technical cooperation between the private and public sectors (e.g., patent positions, proprietary rights, anti-trust concerns, etc.).
- Identify a variety of incentives particularly suited to the needs of various venture partners.

In its FY 1987 budget proposal, the Department opted to limit the initial phase-in of the cooperative venture program to extraction technologies. In prior years, the Office of Fossil Energy has significantly increased the knowledge base for oil, gas and shale technologies. The nature of the economics of many of these technologies, coupled with the solid background of relevant industrial firms in participating in joint venture projects, makes extraction technologies prime candidates for an initial effort to examine the feasibility of the cooperative R&D venture pool approach.

The spectrum of efforts anticipated in these areas range from laboratory/bench scale activities through field tests -- precursors to actual commercial deployment and cash flow. The scale will vary from technology to technology and from resource to resource.

For example, many unconventional gas resources have not been defined well enough to develop predictable recovery strategies. Industry and other parties could form a cooperative venture with DOE to develop sufficient data requisite for the next step: design and test of promising recovery concepts. Similarly, in the area of underground coal gasification, primary interest could be focused on modest-scale, pre-commercial field tests to produce the data necessary for the subsequent design and construction of commercial plants. Additionally, interest may be expressed in the use of the technology in otherwise unattractive coals not currently being produced.

Therefore, in FY 1987, $12,500,000 will be made available to:

- Encourage the formation by industry of cooperative R&D ventures (which may also include other parties such as investors, universities, institutes and public laboratories) to offer partnership opportunities to DOE in the following areas: recovery of gas from unconventional sources; enhanced oil recovery; oil shale; and underground coal gasification. ($12,500,000)

CLEAN COAL TECHNOLOGY PROGRAM

(Dollars In Millions)

ACTIVITY	FY 1985	FY 1986 Approp.	FY 1987	Percent Change from FY 1986
Operating Expense	$ ...	$99.4	$149.1	+50.0%

The principal goal of this program is, as stated in Public Law 99-190, "for the purposes of conducting cost-shared clean coal technology projects for the construction and operation of facilities to demonstrate the feasibility of future commercial operation." It is targeted at a wide variety of market applications.

Public Law 99-190 made available a total of $397.6 million for the Clean Coal Technology demonstration program (after the 0.6% general reduction applied across-the-board to programs contained in Public Law 99-190). Of these monies, $25 million will be held in reserve to cover the cost of overruns in the event the Government agrees to share such costs. Also, funds will be set aside for contracting, travel, and ancillary costs incurred by the Department of Energy in implementing the program. All of the remaining funds will be available for award. Under the terms of Public Law 99-190, the funds will become available in three increments as follows: $99.4 million in FY 1986, $149.1 million in FY87, and $149.1 million in FY88.

The Clean Coal Technology Program is related to, but not a direct continuation of, the effort undertaken by DOE following passage of Section 321, Public Law 98-473, 98 Stat. 1874. This section directed the Secretary of Energy to solicit "statements of interest in, and proposals for projects employing emerging clean coal technologies," and submit a report to Congress. In carrying out this Congressional request, DOE received 175 submissions with project values totaling more than $8 billion. On May 1, 1985, DOE submitted its findings in the Report to Congress on Emerging Clean Coal Technologies (NTIS Document Number: DE850154290). The Department also submitted a Supplemental Report to Congress on Emerging Clean Coal Technologies (NTIS Document Number: DE85018356) which further characterized a wide range of clean coal technologies.

Funds for the Clean Coal Technology program subsequently made available by Congress will provide for a competitive solicitation of project proposals and the award of cost-shared federal assistance to those projects that best demonstrate the feasibility of new clean coal technologies for future commercial applications. The issuance of the solicitation, receipt of proposals, and selection of projects will be made in accordance with the timetable established in Public Law 99-190. Specifically, the $149.1 million previously made available for FY 1987 will be used to:

- Support, on a cost shared basis with the private sector, demonstrations of advanced technologies to gather data needed for their ultimate commercialization. ($147,112,000)
- Provide for contractual services and in-house support in performing post award monitoring and technical data base activities. ($1,988,000)

The following page contains a table summarizing the FY 1985-FY 1987 funding for DOE's Fossil Energy research and development program. (The chart does not reflect funding made available for the Clean Coal Technology program since it represents previous appropriations.)

DEPARTMENT OF ENERGY

FISCAL YEAR 1987 CONGRESSIONAL BUDGET REQUEST

SUMMARY OF ESTIMATES BY APPROPRIATION BY MAJOR ACTIVITY

FOSSIL ENERGY RESEARCH AND DEVELOPMENT

(Budget Authority in Thousands of Dollars)

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Request
COAL:			
Control Technology and Coal Preparation	$ 34,791	$ 31,950	$ 18,147
Advanced Research and Technology Development	30,804	33,849	27,224
Coal Liquefaction	31,110	31,620	9,147
Combustion Systems	30,092	29,113	9,169
Fuel Cells	40,472	34,057	5,000
Heat Engines and Heat Recovery	11,850	12,314	7,942
Underground Coal Gasification	5,705	4,072	---
Magnetohydrodynamics	30,721	27,717	---
Surface Coal Gasification	35,134	41,323	5,598
Subtotal, Coal	250,679	246,015	82,227
PETROLEUM:			
Advanced Process Technology	5,364	5,523	1,811
Enhanced Oil Recovery	11,702	11,454	4,484
Oil Shale	14,628	12,136	3,595
Subtotal, Petroleum	31,694	29,113	9,890
GAS:			
Unconventional Gas Recovery	10,142	8,503	5,252
Subtotal, Gas	10,142	8,503	5,252
POLICY AND MANAGEMENT:			
Headquarters Program Direction	8,273	13,380	11,260
ETC Program Direction	37,907	39,265	28,740
Federal Inspector for the Alaska Gas Pipeline	1,401	511	221
Capital Equipment	4,425	2,865	---
Construction	4,916	3,332	---
Subtotal, Policy and Management	56,922	59,353	40,221
COOPERATIVE VENTURE R&D POOLS	---	---	12,500
Subtotal, Fossil Energy	349,437	342,984	150,090
Use of Prior Year Balances and Other Adjustments	-60,389	-31,030	-67,323
Total, Fossil Energy R&D	$289,048	$311,954	$ 82,767

DEFERRALS

Mr. **Murtha**. Thank you, Mr. Secretary.

We sent a letter, on February 17, to the Secretary of Energy, asking about the deferrals. When can we expect an answer on that letter?

Mr. **Bauer**. That is the letter, Mr. Chairman—I am trying to recall—that is the one signed by——

Mr. **Murtha**. McClure, Byrd, Yates, and Regula.

Mr. **Bauer**. The four Members. That letter is in the process of final coordination, as I understand it right today, Mr. Chairman, and I would expect an answer very soon on that.

Mr. **Murtha**. Do you have any word on deferrals at all for us this morning?

Mr. **Bauer**. It is my understanding this morning that the President's message, which he sends up monthly, having to do with rescissions and deferrals, is that in the fossil energy area, there are two elements, two program activities that will be changed from deferrals to rescissions. I expect that message to be coming out this week.

Mr. **Murtha**. We are having markup this afternoon, as you may be aware, to deal with the other deferrals or to deal with the overall deferral picture.

Mr. **Bauer**. Yes, Mr. Chairman.

Mr. **Murtha**. We had GAO before the Legislative Subcommittee, and Chairman Brooks is having testimony this morning. It is really upsetting to us that we made a deal at the end of the year with all the elements of the budget, and then the administration comes back with deferrals after we made a deal on how the money should be spent. So we have some real problems here which you and I aren't going to solve together. But hopefully we will be able to work out the problems that deal with energy, at least solving those things together.

BUDGET JUSTIFICATIONS

Let me get right into the questions and first of all talk about the overall budget. We are going to try and finish this up this morning, if possible, so I will keep my questions as short as I can; if you will do the same, and if you want to expand for the record, that would be fine.

Mr. **Bauer**. Thank you.

Mr. **Murtha**. Your budget justifications, on pages 19 and 20, list four items which would support a vigorous Federal R&D program. First, there are major fuel-consuming sectors where practical technologies for the direct utilization of coal, electricity and renewables have not yet evolved. Is this a correct statement? I quote from the justification, "There are major fuel-consuming sectors.* * *"——

Mr. **Bauer**. Yes.

Mr. **Murtha** [continuing]. "Where practical, technologies for the direct utilization of coal, electricity and renewables have not yet evolved."

Mr. **Bauer**. That is true, Mr. Chairman.

Mr. **Murtha**. Would you give us some examples of developing technologies.

DEVELOPING TECHNOLOGIES

Mr. **Bauer**. One is advanced technology; that has to do with the gas turbines, and its ability to burn coal in the utility, the cogeneration and transportation sector. This afternoon, they will be doing some other activities on pressurized fluidized bed. Also in the 1987 budget, if we look at, and I will try to keep this short, where we are on combustion in terms of AFB, Congress provided money for TVA, and so we have it in the utility sector. We have done work at Georgetown.

We have done work on our combusters in the utility sector, so now we are down to about 24 quads. There is a very large market including the residential, the commercial and the light industrial, and that is where we are putting our next emphasis on in 1986 and 1987 via the competitive procurement process.

Mr. **Murtha**. That means there is a lot of R&D to be done; isn't that accurate?

Mr. **Bauer**. Yes, sir, Mr. Chairman.

Mr. **Murtha**. Second, "The payback period"—and again I am quoting from your justification—"The payback period to recover the investment in new capacity is long compared to the frequency of unanticipated changes in oil prices, market conditions and environmental concerns." Is that accurate?

Mr. **Bauer**. That is a true statement, Mr. Chairman.

Mr. **Murtha**. Does this mean that to invest in energy technology is very risky and very expensive?

Mr. **Bauer**. Yes, it is.

Mr. **Murtha**. Third, "The front-end capital component of energy costs associated with coal, oil shale, tar sands and other unconventional fossil energy resources are significantly higher than those associated with the intensively utilized conventional liquid and gas resources, and lead times are longer, thus increasing overall risk." Does this mean it is more difficult to get private investing in the energy section than in other technologies?

Mr. **Bauer**. Yes, it is.

Mr. **Murtha**. I think you know, Mr. Secretary, that when you deal with the Government on a year-to-year basis, it really is difficult for industry to plan ahead on a long-term development project, because they never know what is going to happen. This makes it much more difficult for industry to justify investment in projects like that. Is it true that for unconventional energy sources this is even more difficult?

Mr. **Bauer**. Yes, it is, Mr. Chairman.

ENVIRONMENTAL IMPACTS OF FOSSIL FUELS

Mr. **Murtha**. Fourth, "The inherent potential for unacceptable environmental impacts and attendant costs associated with certain abundant fossil resources such as coal and oil shale is relatively high." Isn't environmental impact one of the areas that is most appropriate for Federal involvement?

Mr. **Bauer**. Definitely.

Mr. **Murtha**. Isn't it an area with little or no economic incentive for industry?

Mr. **Bauer**. If there is no economic incentive for industry, but there is a very large resource for which they don't have the financial resource to initiate or pursue it, I think there is an appropriate Federal role. Provided that when we bring that technology to the point where it can penetrate the market, it will make a significant contribution to our energy usage.

Mr. **Murtha**. The problem, though, is that the industry that is involved isn't willing to spend the money if they can avoid it, without some direction and some help from the Federal Government. It is an advantage to us, in my estimation, because obviously it reduces health risks.

Mr. **Bauer**. It sure does.

Mr. **Murtha**. And we have to propose incentives to put in the environmental control. There is no question, that is interfering with the competitiveness of the American industry, and yet in the long-term, it will be much cheaper because of the health advantages and less payout there.

In the case of all of these disincentives for industrial investment in fossil energy programs beyond normal oil and gas production, why are you so drastically reducing your budget? I think you can answer that for the record, Mr. Secretary.

Mr. **Bauer**. Yes.

Mr. **Murtha**. I know what the answer is going to be. Answer the rest, and I know you are obligated to answer it, and I appreciate that. I understand the constraints you are under, and I know it is a real problem.

[Committee note.—This topic is addressed in the questions and answers submitted for the record.]

ECONOMIC INCENTIVE

Mr. **Bauer**. There is just this one point, Mr. Chairman. Going back on some of the points that you were making, and talking about the economic incentive and the enviromental aspects, I think that we have reached a completion point on two programs, and that is the Enhanced Oil Recovery and the Oil Shale programs. I will make this very quick. We have done a lot of work on these two technologies, and we saw that there was a lot of bids from the SFC for oil shale, but they required a very large price support.

There is a point now where we have a very large resource out there, and there are a lot of companies interested in those technologies and they want to develop those resources. But what do they do next? What do we do next? We really don't know. I am here to say that today, we really don't know what to do next technologically. That is why we put in this cooperative R&D venture. We are a minority partner. We are saying to the outside, for example to the oil shale people, that at least two people should get together, or preferably three or four, because that reduces the amount each one has to put on the table, and come in to us and tell us what needs to be done relative to the environment or get the economics down, whatever it is to help use that resource. And by them putting up less money, it is less for each of the partners, we leverage our dollars.

The same thing on EOR. There was a lot of work before the oil prices dropped, I will admit, Mr. Chairman, but there is EOR in California and we are doing work at NPR-1 and 3, so we need to know what is happening next.

COOPERATIVE VENTURES

Mr. **MURTHA**. In the face of all the reductions in the budget, you requested a $12.5 million initiative for cooperative R&D ventures. What areas of your budget have been reduced in order to accommodate this particular initiative?

Mr. **BAUER**. It may appear that the areas were reduced, but I see balancing across the board, and what we did was we took Underground Coal Gasification, Enhanced Oil Recovery, Oil Shale and Unconventional Gas Recovery, all four of those, and put them together into one effort, and it is just called a cooperative venture, $12.5 million.

Mr. **MURTHA**. Do you have any assurances that the areas you have reduced will actually be covered by agreements?

Mr. **BAUER**. The areas that I reduced?

Mr. **MURTHA**. Yes, what you just said. Will they be covered by agreements or are they just going to give up? What is going to happen?

Mr. **BAUER**. You mean on the Enhanced Oil Recovery and the Oil Shale?

Mr. **MURTHA**. Yes.

Mr. **BAUER**. My staff at Germantown has had a significant number of calls and interest in it, and I recently received a letter from GRI that says "We believe the venture concept has the potential to significantly improve the ability of DOE to work with industry." So we are getting letters, getting a lot of calls, even some calls saying, "Okay, you talk about this new initiative, when are you going to stop talking about it and put something out in the street?"

Mr. **MURTHA**. If those areas do not receive proposals for cooperative ventures, how do you suggest that necessary research and development be funded?

Mr. **BAUER**. If that initial effort in a cooperative venture does not result in high-priority, good proposals, which meet our goals, objectives and strategy, I would see us coming back to Congress and saying we tried the initial effort, it did not work, and propose another use for that money, for example, back in those areas or whatever may be priorities at that time.

Mr. **MURTHA**. Please provide the committee with a copy of the budget you submitted to OMB. The department's budget office is also requested to provide similar material for the energy conservation account.

Mr. **BAUER**. We will be pleased to do that, Mr. Chairman.

[COMMITTEE NOTE.—The information was provided by the department and is located in the committee files.]

KEY ACTIVITY SUMMARIES

Mr. **MURTHA**. Throughout your budget justification, and the key activity summaries provided by the department and printed by the committee, the department misrepresents the scope of its activities.

In every area where you are deferring funds, you write the justification as if you had accomplished that work. Do you agree that this is the case?

Mr. BAUER. It is not and it was not an intentional misrepresentation. We wrote the budget to the budget levels, targets given to us in the past, like $150 million, so we wrote that. So the budget narrative is written to that level. The key activities are written as a summary document to that budget.

At the same time, we were doing the deferral process, and that was on a separate track. We did not, whether it was a miscommunication, an error on the fossil part or the department's part or whatever it was, take and convert those key activity charts to reflect the fiscal 1986 deferrals. It may say we are going to complete an effort, but in fact when it is deferred, you can't complete that effort if the money is only funded to March 20. So the key activity charts were turned in to the committee, and you are right, they do match the budget request, but they do not reflect the deferrals submitted to Congress. That is a true statement.

Mr. MURTHA. Isn't it your responsibility to provide the Congress with an accurate description of the program you are carrying out with appropriated funds?

Mr. BAUER. Yes, Mr. Chairman.

Mr. MURTHA. I assume you are going to do that, then?

Mr. BAUER. I will take the key activity charts, modify them to reflect the fact that there are deferrals, if that is an acceptable solution. I will be pleased to do that.

REPROGRAMMING OF FUNDS

Mr. MURTHA. Unauthorized reprogramming of funds. In reviewing last year's testimony, last year's key activity summaries, briefing charts for this year and this year's key activity summaries, the committee has uncovered at least five instances of unauthorized reprogrammings in the Control Technology and Coal Preparation budget activity. Is the department aware of the committee's reprogramming procedures?

Mr. BAUER. I am aware of the committee's reprogramming procedures, yes, Mr. Chairman.

Mr. MURTHA. If so, why were there reprogrammings without notifying the committee?

Mr. BAUER. I will let Mr. Walsh speak about the reprogramming provisions. If we look at what happened in the area of Flue Gas Cleanup in the 1986 budget we said, for example, that we were going to do an acid rain precursor control technology. We estimated—and that is what that is, because we didn't go out on the street competitively for what that was. We estimated the number. I believe it is $5,320,000. Then that budget came to Congress, and we went out competitively to——

Mr. MURTHA. Excuse me, Mr. Secretary. We don't argue that you may have a valid reason for trying to reprogram. What we are saying is you still have to come to Congress to get this done. And when are we going to get these reprogrammings?

Mr. **Bauer**. I will let Mr. Walsh talk about whether that constitutes a reprogramming or not, because it was all within one budget line item, which is flue gas—Jerry.

Mr. **Walsh**. We did not consider that to be a reprogramming, when we made these management decisions. We wouldn't know what to reprogram.

Mr. **Murtha**. Let me read to you from the Congressional Record: "A reprogramming shall also consist of any significant departure from the program described in the agency's budget justification." On the same page, this is on H-7983, "Any proposed reprogramming must be submitted to the committee in writing prior to implementation if it exceeds $250,000 annually or results in an increase or decrease of more than 10 percent annually in affected programs."

Mr. **Walsh**. Yes, I realize that. What happened here within one budget line item called Flue Gas Desulfurization, we had a change in the direction of the program based upon receiving responses to a solication.

Mr. **Murtha**. I understand what you are saying, but it is clear to us that you need reprogramming. It fits into the criteria of reprogramming, so we need you to send us the reprogramming. We should have gotten it before it happened, but we need to see those reprogrammings.

Mr. **Bauer**. Mr. Chairman, we have done an analysis of what we said we were going to do in 1986, and what we said about 1986 in the 1987 budget. I have that analysis. I understand what you are saying. I will take that back to the department and the controller people and we will talk about it and take the appropriate action, and whatever that is, we will supply it for the record or get a letter back to the committee.

ASSESSMENTS FOR PROGRAMS

Mr. **Murtha**. Let's talk about assessments for programs. I invite your attention to a statement on page 5 of testimony before the subcommittee on February 25th by the Energy Research Corporation voicing a complaint of other contractors as well. "The DOE portion appropriated for fiscal 1985-1986 is $6.25 million less 15 percent taxed for DOE's management activities."

I also invite your attention to Section 309 of the fiscal year 1986 interior appropriation, a section carried for several years: "No assessment may be levied against any program, budget activity, subactivity or project funded by this Act unless such assessment and the basis therefor are presented to the Committees on Appropriations and approved by such committees."

Is it correct that such taxes occur?

Mr. **Walsh**. We do not assess our line technology programs. Two years ago I believe it was, or three years ago, the Congress pointed that out to us, that we were assessing programs to take care of things like small business, research, et cetera, and they directed us to start budgeting for it, and we did. It was approximately $5 million a year, and it is in our Program Direction account, and we have been budgeting for it and it has been appropriated each year.

If you are talking about assessments beyond those, we have done an analysis of all of our congressional add-ons in 1984 and 1985, and we traced them to their obligation home, with a contractor. I would be glad to submit that for the record.

Mr. **MURTHA**. What did you use those funds for?

Mr. **WALSH**. I could go through it with you. I have several.

Mr. **MURTHA**. Submit it for the record.

Mr. **WALSH**. Yes, sir.

[The information follows:]

FY 1984 CONGRESSIONAL ADD-ONS
($ in thousands)

	ADD-ON AMOUNT	AMOUNT OBLIGATED	TO WHOM
CONTROL TECH. & COAL PREP.			
● Flue Gas Cleanup			
– Comprehensive review & analysis of studies on acid rain	500	500	Argonne National Laboratory
● Gas Stream Cleanup			
– Continue tech. base in hot gas cleanup for coal combustors & gasifiers for adv. power systems	2550	2550	7 separate contracts – largest was Aeroject ($650K)
● Waste Management			
– Continue tech. base for solid waste removal	2900	2900	$ 500K METC in-house; $1015K National Labs; $389K Radiant balance in smaller contracts
● Coal Preparation			
– Continue res. at CMTC	1500	1400	Southern Illinois University
– Continue res. at Ames Lab	1500	1400	Ames Laboratory
ADV. RESEARCH & TECH. DEV.			
● Direct Utilization			
– Sandia Comb. Res. Facility	500	500	Supplement to Baseline for $790K to SNL-Livermore
– Expand tech. base for increased util. of coal	2000	2000	Supplement to Baseline for $2287K of expanded work thru 13 new contracts at PETC & METC as follows: $250 TRW $ 27 U of Pitts. $203 A.D. Little $577 EER $100 Penn State $146 Westinghouse $250 UTRC $158 Rockwell $ 75 West Va. Univ. $ 70 Ohio State $177 ERC $174 CMU $ 80 NBS
– Private sector investigation of PAFC adv. tech. requirements identified in 4.8MW & 40kW	2000	2000	NASA/UTC
– Generic research in fuel cell tech. prog.	2000	2000	$800K ANL; $195K BNL; $150K LBL; $115K LLL; $740K METC
● Processes			
– Liquefaction	500	500	Supplement to Baseline for $1208K of AR&TD Liquef. work as follows: $125 USC $131 U of Hartford $181 U of Pittsburg $200 SRI $175 U. of Ill. $110 U. of Wyoming $125 CSM $125 U. of Minn. $ 36 Oklahoma St U
– Gasification	500	500	$200K Univ. of California; $160K Rice Univ.; $140K CCNY
– Continue thermophysical char. of synthetic fuels	1000	1000	$500K NIPER; $250K PETC; $250K universities
● Materials			
– Maintain FY 83 level	1500	1500	Supplement to Baseline for $7M total prog. as follows: $250K LANL $5000K ORNL $17K AMS $875K ANL $ 300K PNL $170K INEL $ 300K LBL
● Environmental Activities			
– Emission characterization	350	350	ANL and BNL
– Environmental effects transformation	400	400	$340K PETC in-house; $60K Univ. of Rhode Island
● Planning & Policy			
– Policy studies, environ. analysis, & tech./econ. planning assessments	400	400	ORNL
– Continued participation in the IEA	1000	1000	IEA
● Technology Base Synthesis	600	456	$100K NY St. Univ.; $235K spt. contracts; $20K CSIRO; $104K AMS; balance in carryover to FY85
● Instrumentation, Control, & Diagnostics			
– Instrumen. activities for adequate measurement systems	2500	2503	$1030K National Labs; $100K PETC; $883K 8 contractors; $490K METC in-house

FY 1984 CONGRESSIONAL ADD-ONS (continued)
Page 2

	ADD-ON AMOUNT	AMOUNT OBLIGATED	TO WHOM
COAL LIQUEFACTION			
• Indirect Liquefaction			
- Complete MTG pilot plant proj.	1000	1000	International Agreement with Fed. Rep. of Germany for pilot plant operation of Mobil technology
- Continue bench scale res. with new catalyst systems & process concepts	2900	2900	Supplement to FY84 competitive procurement. Bench-scale res. initiated at Air Products ($636K), Union Carbide/Terrytown ($1200K), Amer. Cyanamid ($240K), Union Carbide/S. Charleston ($712K), UOP ($258K), & several univ.
• Advanced Process Development			
- Continue Wilsonville pilot plant operation	6500	6500	Southern Company Services
• Support Studies/Engrg. Evaluations			
- Continue coal liquef. data base at PETC & environ. res. in spt. of & coordinated with SFC activities	1500	1300 200	ORNL environmental support PETC in-house data base management
COMBUSTION SYSTEMS			
• AFB Combustion			
- Provide support for other identified AFB tech.	400	400	$12K Battelle; $213K AeroJet; $175K Kellogg
• PFB Combustion			
- Continue support of CURL, long-term materials testing, & NYU test facility	2600	1546	$1081K NYU; $14K GE; $451K Nat'l Coal Board; $1054K carryover to FY85 for PFB competitive procurement
- Follow-on testing at Grimethorpe facility	1500	1500	Direct to Grimethorpe from Headquarters
• Alternative Fuel Util.			
- Keep dev. of coal-water mixtures on schedule	3600	3600	Supplement to Baseline as follows: $30 Adelphi $ 43 MIT $100 BNL $11 Comb. Eng. $161 MIT/NECUP $375 OFPO $50 CMU $192 Mitre $2008 PETC in-house $ 8 Gulf&Western $520 TRW $102 METC in-house
• Adv. Combustion Technology			
- Start tests to enhance the retrofit of existing oil-fired boilers for coal comb.	1700	1700	Supplement to Baseline as follows: $1461K AVCO; $150K Brookhaven Nat'l Lab; $35K carryover; $54K technical spt
FUEL CELLS			
• Advanced Concepts			
- Further dev. of solid oxide fuel cells	500	500	Westinghouse
- Thermionics	2600	2600	$535K Rasor Assoc.; $1215K Thermo Electron; $850K Gen. Atomics
• Molten Carbonate Systems Dev.			
- No specifics	2500	2500	Various contractors including ANL and GE
- Direct fuel cells	1700	1676	ERC; balance in carryover to FY85
• Phosphoric Acid Systems Dev.			
- 7.5MW air-cooled system	13300	13300	NASA/Westinghouse
- 11MW water-cooled system	6000	6000	$1990K Con Edison; $1600K NASA/IFC; $2410K NASA
- 40kW on-site program	5000	5000	NASA/IFC
- Dev. of an alt. on-site PAFC using organic coolant	1500	1500	$1150K NASA/Engelhard; $350K NASA
HEAT ENGINES			
- Comb. zone durability & coal-fired turbine prog.	4000	4000	$1525K GE; $500K METC in-house; bal. in small contracts
- Use of a coal fuel directly in diesels & turbines	500	500	6 small contracts
- Dev. of a new tech. base for use of a coal-based fuel directly in a diesel engine	1000	955	6 small contracts; balance in carryover to FY85

FY 1984 CONGRESSIONAL ADD-ONS (continued)
Page 3

	ADD-ON AMOUNT	AMOUNT OBLIGATED	TO WHOM
UNDERGROUND COAL GASIFICATION			
o Environ. & Adv. Research			
- Continue tests on CRIP project	3300	3300	$425K Sandia; $2225K LLNL; $400K WRI Coop.; $100K misc.; $150K Headquarters
- Supporting basic research	700	700	$300K WRI Coop.; $90K Sandia; $310K small contracts
MAGNETOHYDRODYNAMICS			
- Dev. of MHD tech. concentrating on engrg. dev.	30000	30000	$ 880 GE $1203 Westinghse $ 450 Stanford $4192 AVCO $ 711 STD $3285 TRW $ 450 MIT $8871 Idaho/CDIF $6338 CHO/UTSI $2000 CHO/MSU $120 CHO/Mngt. $986 CHO/ANL $100 Pacif. NW Lab $160 Unobligated $254 Technical spt.
SURFACE COAL GASIFICATION			
o Adv. Process Development			
- Within funds, $1M study hot gas cleanup methods using mixed metal oxide sorbents & solid absorbents to handle dusty & corrosive gases without conventional quenching			
- Res. to reduce moisture & upgrade heating value of low-rank coals & subbituminous coal utilizing wet carbonization process dev. equip.	2000	2000	IGT
- Dev. of adv. gasif. concepts that utilize internal recirculation catalysts or carbon dioxide	950	932	IGT; balance in carryover to FY85
o Systems Engineering Concepts			
- Beacon process	1000	977	TRW; balance in carryover to FY85
- Waltz Mill agglomerating fluidized bed gasifier	6500	6500	$4126K Westinghouse; $2132K KRW; $242K Sanitech
- General Elec. gasifier	1000	1000	GE
- BOM gasifier at Twin Cities res. facil.	1000	1000	MIFGA
o Environmental & Engrg. Analyses			
- Total prog. includes $2.1M GFETC slagging gasifier, $1M tech. data base, & $1.3M associated engrg., environ., and socioeconomic analysis	1400	1400	UNDERC; METC in-house
UNCONVENTIONAL GAS RECOVERY			
o Eastern Gas Shales			
- METC Devonian shale anal. & Eastern mineback facil	2500	2500	BDM
o Western Tight Gas Sands			
- Multi-well test & integrated supporting res. including diagnostic instrumentation & modeling	5000	5000	Sandia National Lab
o Environ. & Adv. Research	1000	1000	METC in-house
o Geopressured Methane			
- Design well testing at 1 site; analysis & correlation of test data from past field experiments	2000	0	Funds used to offset FY85 appropriation
ADVANCED PROCESS TECHNOLOGY			
o Adv. Exploratory Res.			
- Adv. exploratory res. with emphasis directed toward microbial EOR	1850	1850	o $811K oblig. for microbial EOR as follows: $154K U. of Oklahoma; $109K Oklahoma St. U.; $107K U. of Georgia; $111K U. of So. Calif.; $330K NIPER o Remainder of add-on was included in total AER program
o Arctic & Offshore Res.			
- Characterization of federally-owned offshore areas	250	250	$150K Univ. of Alaska; $50K U.S. Army; $50K Sandia

FY 1984 CONGRESSIONAL ADD-ONS (continued)
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	ADD-ON AMOUNT	AMOUNT OBLIGATED	TO WHOM
OIL SHALE			
o Oil Shale Tech. Base			
- Redesign of a comprehensive oil shale prog.	2000	2000	$297K WRI Coop.; $360K LANL; $453K Sandia; $890K METC in-house
- Dev. of cascading bed retort process	2000	2000	LLNL
- Geokinetics horizontal modified in situ proj.	1350	1350	Geokinetics
o Environmental Mitigation			
- Fragmentation & examination of spent shale for use in an AFB application	2200	2437	$200K PNL; $500K LBL; $1027K LANL; $710K Sandia

FY 1985 CONGRESSIONAL ADD-ONS
($ in thousands)

	ADD-ON AMOUNT	ADD-ON INCLUDING REDUCTION	AMOUNT OBLIGATED	TO WHOM
CONTROL TECH. & COAL PREP.				
o Flue Gas Cleanup				
- Dry FGC sys. for removal of SOx & NOx emissions from combustion of high sulfur coal	1250	1229	1229	Argonne National Laboratory
- Util. scale test of a comb. catalyst, Glo-Klen	2000	1967	0	Deferred and used as offset in FY 86 Interior Bill, P.L. 99-190
o Gas Stream Cleanup				
- Maintain prog. at FY84 level, allowing for a modest expansion of res. on contaminant removal technologies for direct fired turbine systems & to investigate the applicability of the hydrogen sulfide removal tech. developed for the MCFC to gasif. sys.	2500	2459	2459	$ 709 Westinghouse $152 PSI $1029 NYU $ 22 LSU $ 400 GE $147 misc. contracts
o Coal Preparation (non-adds)				
- Within funds: $1M for Carbondale	(1,000)	(980)	(980)	Southern Illinois University
$1M for Ames Lab	(1,000)	(980)	(980)	Ames Laboratory
$1M for lab scale demon. of purged carbon	(1,000)	(983)	0	Deferred and used as offset in FY 86 Interior Bill, P.L. 99-190
ADV. RESEARCH & TECH. DEV.				
o Direct Utilization				
- Private sector investigation of PAFC adv. tech. requirements identified in 4.8MW & 40kW	1000	983	0	Deferred and used as offset in FY 86 Interior Bill, P.L. 99-190
o Materials				
- Restore prog. to FY 84 level	420	413	0	Deferred and used as offset in FY 86 Interior Bill, P.L. 99-190
- Strategic & critical materials res. in conjunction with BOM prog.	1000	983	983	INEL
COAL LIQUEFACTION				
o Indirect Liquefaction				
- Continue testing of LaPorte facility	3300	3234	3234	Air Products & Chemicals
- Industrial catalyst & process dev. research	1500	1475	1475	Novel catalyst/process res. as follows: $370 Air Products $144 Lehigh Univ. $ 90 Bechtel $100 Univ of Arkansas $130 SRI $200 Sandia Nat. Lab $240 UOP $ 25 Union Carbide $176 MIT
o Advanced Process Development				
- Maintain Wilsonville pilot plant through FY 85	5550	5439	5439	Southern Company Services
- Continue integrated bench-scale res. for determination of processes for future scale-up	1000	980	980	HRI
- Coal liquef. infratechnology & generic tech. dev.	1000	980	980	University of Kentucky
COMBUSTION SYSTEMS				
o AFB Combustion				
- Tube replacement at an existing DOE AFB facil.	1300	1278	1278	Georgetown Univeristy
FUEL CELLS				
o Advanced Concepts				
- Keep dev. of solid oxide fuel cells on schedule & allow a modest expansion of critical materials res. & alternative module design studies	700	688	688	Westinghouse

FY 1985 CONGRESSIONAL ADD-ONS (continued)

	ADD-ON AMOUNT	ADD-ON INCLUDING REDUCTION	AMOUNT OBLIGATED	TO WHOM
• Molten Carbonate Systems Dev. (Approp. $8.851M)				
- Full area short stack dev. ($4.13M total prog.)	1100	1082	1082	IFC
- Direct fuel cells ($2.705M total prog.)	2050	2016	2016	ERC
- Tech. base res. using existing facil. for contaminants study & prototype endurance testing ($2.016M total prog.)	1750	1721	1721	Various contractors including Ceramtec, IGT, ANL
• Phosphoric Acid Systems Dev. (Approp. $28.912M)				
- 7.5MW air-cooled technology dev. ($11.801M total prog.)	8800	8654	8654	$6290K NASA/Westinghouse; $2364K NASA
- 11MW water-cooled technology dev. ($7.867M total prog.)	5400	5310	5310	$4339K NASA/IFC; $660K IFC; $311K NASA
- 40kW on-site technology dev. ($5.9M total prog.)	4600	4524	4524	NASA/IFC
- Continue dev. of an alt. on-site PAFC using an organic coolant ($1.967M total prog.)	2000	1967	1967	$1558K NASA/Engelhard; $409K NASA
- Technology base research ($1.377M total prog.)	1400	1377	1377	NASA
HEAT ENGINES				
- Support additional tech. base studies associated with direct firing of coal-based fuels in gas turbines & diesel engines	4000	3934	0	$5,452K carryover to FY86 for anticipated awards resulting from competitive procurement
- Initiate a study for the dev. of an integrated coal-fired power train for locomotive applications	500	492	492	GM and GE equal split
MAGNETOHYDRODYNAMICS				
- Support the revised MHD multiyear program	13700	13473	13473	Supplement to Baseline as follows: $2121 AVCO — $ 14 Idaho/MERDI $ 10 Fluidyne — $ 136 Idaho/Multi-Tech $ 117 MIT — $3205 CHO/UTSI $1627 TRW — $ 45 CHO/B&W $ 122 Burns&Roe — $ 410 CHO/ANL $ 301 STD — $ 49 CHO/Mat. $ 40 Stanford — $ 817 CHO/MSU $ 222 Westinghse — $ 14 RO/PNL $4223 Idaho/CDIF
SURFACE COAL GASIFICATION				
o Systems Engineering Concepts				
- Waltz Mill gasifier	6500	6392	6392	KRW
- Dev. of a high-temp., high-pressure bench-scale res. unit for study of composite sorbents	1250	1229	1091	IGT; $134K in carryover to FY86
- Testing fixed-bed gasifier sys. at BOM facil. in Minn.	750	738	750	Dept. of Interior
- Oper. of ash U-GAS agglomerating fluidized bed gasif. technique	1500	1475	0	Deferred and used as offset in FY 86 Interior Bill, P.L. 99-190
- Demonstration of Kilngas gasif. process	7500	7376	7376	Allis Chalmers
UNCONVENTIONAL GAS RECOVERY				
• Eastern Gas Shales				
- Reservoir property measurement acquisition, data base dev., model dev. & refinement, & expansion of offset well test. With increase, Comm. expects DOE to undertake a new res. effort in the areas of well stimulation & longevity of producing wells in Devonian shales.	1400	1377	977	BDM; $400K in carryover to FY86

FY 1985 CONGRESSIONAL ADD-ONS (continued)
Page 3

	ADD-ON AMOUNT	ADD-ON INCLUDING REDUCTION	AMOUNT OBLIGATED	TO WHOM
• Western Tight Gas Sands – Continue res. principally to allow model verification in wells in a number of areas of the Piceance Basin	450	443	443	$263K Sandia; $180K METC in-house
OIL SHALE				
• Oil Shale Tech. Base – Specific eastern oil shale res. in areas identified in the Conference rpt.	3000	2950	2581	$975 Hycrude $261 U of Alabama $241 Cliffs $266 Eastern Shale $100 WRI $350 LLNL $ 38 Terra Tec $350 METC In-house $369 Carryover FY86 PRDA

GREAT PLAINS STATUS

Mr. **Murtha**. Do you want to ask questions about the Great Plains, Ralph?

Mr. **Regula**. Thank you, Mr. Chairman.

I have a question. What is the current status of Great Plains, and what are your plans for the future?

Mr. **Bauer**. I am pleased to report Great Plains is running quite well. By that I mean, in January, we put out 4 billion standard cubic feet, and in February, I think, we achieved a production capacity about 99.8 percent of design. Everything is going well in the plant. I have just authorized the final capital improvement, and those that are necessary to comply with the state odor requirements. Number three, we are out in the street with a request for statements of interest in and informational proposals for people interested in purchasing the facility. They are to get their responses in to us by April 4.

Also, in the court case and summary judgment, the judge in North Dakota determined that the contracts are valid and enforceable. For the month of January, then, all the gas purchasers paid at the gas purchase agreement price, not the market price.

One of the partners, ANR, paid us the back pay for the times that he was paying at the market price rather than the gas purchase price. Court action is still ongoing. There may be some appeals, but we see ourselves going to foreclosure. We are going to run that plant. We have run it without the first cent of taxpayer dollars since we took it over on the first of August. We want to transfer the plant to the marketplace. I don't see us in there running a plant to produce synthetic natural gas, and that is marketplace action.

Mr. **Regula**. What are the incentives for someone to invest in this plant, as you see it?

Mr. **Bauer**. The judge's ruling was that the gas purchase agreements are valid and enforceable, and, therefore, under the terms of that agreement, the gas price is tied to No. 2 fuel oil until 1989. Of course, we know what is happening to No. 2 fuel oil. For example, in January we received $5.71 a million Btu for that gas, and the market price was about $2.89.

The plant has flexibility. It could make other products. ANG was doing a study for us looking at possibly making liquid products. Somebody taking it over could take advantage of the taxes, production tax credit, R&D tax credit, investment tax credit, accelerated depreciation, and there are other products that they could generate from that plant.

Mr. **Regula**. The investment tax credit would be predicated on what we do in the tax reform package, would it not?

Mr. **Bauer**. Yes, it would.

Mr. **Regula**. As well as ACRS?

Mr. **Bauer**. Yes.

Mr. **Regula**. What happens to the enforceability of the contract on pricing of the gas or product, if the department sells the plant to a private investor? Are those contracts viable?

Mr. Bauer. I would see us selling it as a total package with the gas purchase agreements and all other contracts, the plant, the real and personal property, all of that.

Mr. Regula. The judge's ruling on the enforcement would apply to a private purchaser; he would have the same rights——

Mr. Bauer. That is my understanding.

Mr. Regula [continuing]. As the Government?

Mr. Bauer. That is my understanding, Congressman.

Mr. Regula. You are requesting over a billion dollars in the 1986 supplemental, and you can put the justification in the record, but I assume this is to make payment to the Treasury for guarantees?

Mr. Bauer. That is repayment of the difference between what we guaranteed the loan for and what we were able to pay off with the funds that we had under the Energy Security Reserve. It is a paper transfer.

Mr. Regula. What has the plant cost the Government to date? Do you have any kind of a number on that?

Mr. Bauer. What has it cost us to date? When they defaulted, then we picked it up to control the project, and the amount that they defaulted was $1.568 billion, Mr. Congressman. That was the amount of debt.

[The information follows:]

DEPARTMENT OF ENERGY FY 1986 SUPPLEMENTAL REQUEST SUMMARY TABLE ALTERNATIVE FUELS PRODUCTION

[Budget authority in millions]

Loan guarantee	Presently available	Revised estimate	Proposed supplemental
High-Btu Gas	$222.0	$1,242.4	$1,020.4

JUSTIFICATION

The Department is requesting a supplemental appropriation of approximately $1.0 billion to repay a loan to the Treasury associated with the default by the Great Plains Gasification Associates (GPGA) on a loan guaranteed by DOE.

On August 1, 1985, the GPGA partnership of subsidiaries of five major energy companies notified the Government that their consortium intended to abandon the Great Plains Coal Gasification Plant located near Beulah, North Dakota and default on the $1.536 billion guaranteed federal loan it received to build the plant. Under default, control of the project transferred to the Federal Government.

On August 6, 1985, DOE paid approximately $401.6 million for principal and interest due to the Federal Financing Bank (FFB) on August 1. This payment came from a Default Reserve that was established when the loan with the Great Plains Gasification Associates was originally executed. This fund has a balance of $271.7 million. On October 1, 1985, $633 million in principal plus accrued interest was due to the FFB. Since the balance in the Default Reserve was not sufficient to meet the October 1 principal and interest payment, the Secretary of Energy utilized his authority under Section 19n(4) of the Federal Non-Nuclear Energy Research and Development Act, as amended, to execute a note to the Treasury to cover DOE's total liability to the FFB of $1,169 million including $1,138 million principal and $31.9 million interest through October 1, 1985. The loan arrangement also provided for the automatic execution of additional notes for interest payable from October 1 until retirement of the loan via Congressional appropriations. The total amount of funding needed to retire the note to the Treasury is $1,242.4 million and includes $1,169.9 million principal and $72.5 million interest. The interest is calculated through June 30, 1986. If a supplemental is not received by that date additional interest will accrue. This request for supplemental appropriations of $1,020.4 million is to repay the principal loan from the Treasury as well as any subsequent notes needed to cover interest payments through June 30, 1986. The $222 million of the $272 million currently in the Default Reserve will also be applied to the Treasury loan payment with the remaining $50 million to he held in the Reserve for contingencies and to provide the Secretary with sufficient financial flexibility to dispose of the Great Plains Project in a manner most favorable to the Government.

It should be noted that this supplemental request has no direct effect on Federal civilian employment since the appropriations would be used exclusively to pay principal and interest on loans from the Treasury. Finally, these appropriations are required for obligation no later than June 1986.

Mr. **Regula**. I have a few more questions.

Mr. **Murtha**. Go ahead.

EASTERN OIL SHALE

Mr. **Regula**. What are you going to do about eastern oil shale in fiscal year 1987?

Mr. **Bauer**. Two things. We are continuing with the hydroretorting activities with hydrocrude as well as doing some in-house research. Under the $12.5 million cooperative R&D venture, we are hoping that people want to take existing technologies, for example oil shale and eastern oil shale, to the precommercial stage. At least two people could form a partnership and come to us with a good proposal.

ONGOING ACTIVITIES

Mr. **Regula**. I note that you have deferred all the congressional add-ons in fiscal year 1986, and some you are funding until March 20, but others you haven't started yet. What do you really plan to continue in 1986 that you didn't defer, and why?

Mr. **Bauer**. We are continuing along in 1986 and 1987 some activities which have tremendous payoff, I believe, and they are also cost-shared activities. For example, we are continuing the EPRI coal activities, physical coal cleaning activities. There are two contractors with different approaches removing the sulfur from the ashes and the coal. It is an appropriate scale for those people, and we have EPRI, which represents the utilities industry, to scale these up to the appropriate scale and put it into the marketplace.

We are continuing to do work, and I will provide a list for the record, Mr. Congressman, on the acid rain precursor, which is addressing the issues relative to penetrating coal into the markets, and so there are a lot of things. We are continuing work on PFB, an agreement with National Coal Board, involving EPRI, American tube manufacturers and ourselves, so there are a lot of activities.

One more I will mention is in the area of combustion. Very little has been done in the area of the light industrial, the commercial and the residential relative to fuels and combusters. The combustion itself in AFB is a very large market. It is like 20-some quads. We started the program in 1985, and we found that there are appropriate technologies and there is interest. It is a very large market, so we are going to pursue it. I will provide a lot of those for the record.

[The information follows:]

Projects To Continue in FY 1986 and FY 1987

In addition to the projects mentioned earlier, there are additional projects such as research on the advanced NO_x/SO_2 chemistry and advanced concept development in the control technology area, which will be funded for $4.5M in FY 1986 and $2.3M in FY 1987; and research on coal combustion science funded for $5.1M in FY 1986 and $4.6M in FY 1987. In coal liquefaction we are pursuing research on advanced process concepts at $5.6M in FY 1986 and $3.0M in FY 1987. The combustion program in FY 1986 will fund a multiphase cost-shared program with the industrial sector for a high efficiency PFB system for $1.7M in FY 1986 and $1.0M in FY 1987. Research and development is continuing in the clm/micro-coal fuels in residential boiler/furnace systems for $2.6M in FY 1986 and $1.8M in FY 1987. In the fuel cells area we will be initiating a PRDA for further development of external and/or internal reforming of molten carbonate stacks at $3.5M in FY 1986 and $2.6M in FY 1987 and we will continue to evaluate the solid oxide fuel cell concept for $2.3M in FY 1986 and $1.6M in FY 1987. In the heat engines area we are pursuing a coal-fired gas turbine integrated systems test validation program at $7.0M in FY 1986 and $6.0M in FY 1987. We are also continuing technical and economic analyses and related experimental feasibility testing of a coal-fired diesel engine systems program for $2.6M in FY 1986 and $1.5M in FY 1987. In both surface coal gasification and advance process technology we are pursuing theoretical studies on coal gasifiers and gasification systems, as well as arctic and offshore oil and gas research and petroleum research for approximately $3.2M in FY 1986 and $3.0M in FY 1987.

For enhanced oil recovery (EOR) and oil shale research we are pursuing post-field test analyses of EOR trials and studies of geologic heterogeneities and shales characterization studies estimated at $5.6M in FY 1986 and $3.7M in FY 1987.

Finally in the unconventional gas recovery area we are continuing fracture stimulation research and production testing at a multiwell facility in Colorado and geochemical and geophysical diagnostic tests for gas hydrates on the North Slope of Alaska both for $4.8M in FY 1986 and $3.8M in FY 1987.

All of these projects were included in the FY 1986 budget and will continue in FY 1987. They have been chosen to continue because they fit into DOE's mission and role of basic research and they are areas where little or no private sector funding is available. We hope these programs can be brought to the proof-of-concept stage for further development by the private sector.

ACID RAIN

Mr. **Regula.** As you know, the Lewis-Davis report targeted acid rain as a severe problem and estimated the cost of cleanup at up to $5 billion. The question is two-fold: Will the clean coal program be helpful in addressing the problem of acid rain, and secondly, will any of these technologies that you are deferring impede action in addressing acid rain?

Mr. **Bauer.** I believe that the Clean Coal Technology Program now being initiated as directed by Congress has much in common with the innovative technology demonstration program that was in the Envoy's Report, but it also has some differences. The common part is they both talk about cost sharing, 50–50. Ours is $400 million that Congress appropriated. If that is 50–50 cost-shared, that is a total program of $800 million. If the cost share went up to say 75–25, then the amount of the total program size would be over $1.5 billion. However, in working with Congress on the Clean Coal Program, our solicition is for all markets and all coals. The Lewis-Davis report tends to talk about just high-sulfur coal and retrofit application and SO_2 reduction, so we are multimarket, multicoals, and the Drew-Lewis program is mainly the high-sulfur and the retrofit application. One way to look at it is we are trying to come up with the feasibility of all of these, the technical feasibility of the technologies to enter the marketplace and do the job. If you talk about SO_2 reductions, that is talking about capacity.

MHD

Mr. **Regula**. In your fiscal year 1986 accomplishments for MHD, you list a number of cost-shared activities. Is not MHD an example of the type of cooperative R&D venture you are proposing to fund, albeit at a lower cost-share level?

Mr. **Bauer**. The MHD program is currently being funded through March 20. Congress said to implement the program that we recommended to the Congress in June of 1984. With the passage of the fiscal 1986 appropriations on December 19, we prepared and we are still putting together four discrete procurement packages, which we believe are the things that need to be done on that technology. An integrated topping cycle, bottoming cycle, seed regeneration and a conceptual design of a retrofit.

About the time that that was ready to happen, we had to deal with the Gramm-Rudman-Hollings and the budget deficit. And what we did was propose MHD for deferral beyond March 20, 1986. I believe that the budget is proposing that the equipment be transferred to the marketplace, and that the project be terminated.

Mr. **Regula**. I think your pattern on deferrals is somewhat the same as what it was last year, and that was prior to Gramm-Rudman, so I don't know why you would allude to that as the reason. In reality, it is a duplication of policy that predated Gramm-Rudman.

Mr. **Bauer**. It gets back to an affordability issue. We did have a public meeting with the MHD Industrial Forum. I forget the exact date, but it can't be over a week ago. The people there indicated that they would be able to meet and that they were ready to sit down and talk about the cost-sharing requirement imposed by Congress. They were prepared to present the data to Congress.

Mr. **Regula**. We had testimony from the MHD Forum. At an international conference in Rome in January, the Italians announced plans to retrofit an existing power plant with MHD power trains to be purchased from the Soviets or the United States. I am somewhat baffled as to why the Soviet technologists strongly support their MHD program and, obviously, are going after that business with Italy, and why we seem to be dragging our feet on it. Of course, our efforts are undermined by the cool way in which the DOE has treated MHD.

Do the Soviets have surperior technology, or do they see this as something that has a great potential for the future? Certainly, Italy must think it does if they are going to retrofit in what appears to be a commercial application.

Mr. **Bauer**. I am not aware of the status of the Russian technology. On MHD, if one talks about the efficiency, or if one talks about the environmental aspects, one cannot put any negatives on that. It gets down to the issue of the amount of dollars that have to be invested in that technology to get it to the point where one can talk about a retrofit application, and then eventually penetration into the commercial market.

I am aware of the Italians' interest in that. I understand the Italians may be a little bit concerned that the U.S. is giving the wrong signal on MHD, and my staff is going to be submitting a letter to the Italian officials outlining our position. It is nothing to do with the technology. It has to do with affordability, so we will clarify that record.

COOPERATIVE R&D VENTURE POOL

Mr. REGULA. One last question, Mr. Chairman.

Is there any interest to date in the cooperative venture pools, and what is the rationale and benefits for this type of effort?

Mr. BAUER. We have had numerous phone calls from the people on the outside, across the technologies. They range from asking for more information to when are you going to stop talking about it and do something. We are in receipt of letters that said that they believe that the concept has the potential to significantly improve the ability of the department to work with industry in developing and transferring the technology. It is a way of leveraging our dollars—the taxpayer dollars, not our dollars. It is a way for people that share the same common resources out there to band together for a lesser amount in cost sharing a program, and to reap the benefits. We are at a place, as I said a few moments ago, where I really don't know what to do, for example, on oil shale.

We talked about, worked on the technology. We have worked on the data base. We have worked on the environment. We have worked on the various approaches, but we see that there are many people that own that resource, and they are interested in that resource. We saw the bids at the SFC. What we are really saying is out there, we have got $12.5 million and we are ready to leverage that money up to 50 percent with you, and you help establish the R&D priorities, and it has got to be within our goals and strategies.

If it gets two to three people together, and they are putting up their money on day one on precommercial activities, I don't think we will get marginal projects.

Mr. REGULA. Why did it not make sense for you to go out and assess what the interest is and come back to us for funding rather than just appropriate a blank check?

Mr. BAUER. One is the time. If I went out with a notice of program interest, like I am doing on Great Plains, I get involved in the procurement process. I go out with a notice of program interest and a statement of interest and say: Okay world, tell me what you want to do, let's say, on eastern oil shale. And they come back and you allow them 30 or 45 days to do that, and then you come back and evaluate and assess that.

What we are saying here is that, yes, it may be a blank check, but I am proposing that when that package goes out on the street, we share that with Members of Congress, the response is back, all of this is an open-door policy.

COAL USAGE

Mr. REGULA. I would like to ask one follow-up. Your budget makes an eloquent justification for a need to increase the use of coal, and you state on page 20, "If coal is going to obtain projected use levels for generating electricity, its essential that improved technologies be developed to allow the use of coal in both new and existing power plants in an economically competitive and environmentally acceptable manner."

That makes sense, but then you propose at the same time to cut research in the use of coal by two-thirds. There seems to be an inconsistency in your policy statement versus the request for funding.

Mr. BAUER. The use of a fuel is not tied directly to the amount of funding that one puts in any R&D category, and an energy usage in any one particular market is not a useful way to determine what one's research needs are. For example, we live in a world today where oil and gas are the most used fuels, and they touch at least two markets, but that doesn't suggest that they receive more emphasis than any other resource. Yes, I understand what you are saying, Mr. Congressman, attempting to balance the available dollars in a priority means in a way to meet the needs. Not all good things were funded.

Mr. MURTHA. There is another problem, Ralph. They are cutting back joint ventures in outfits that are already working with the Government—I tell you, doing this with the Government is a real risk. The gentleman from Oregon.

11-MEGAWATT FUEL CELL

Mr. AUCOIN. Thank you, Mr. Chairman.

Mr. Bauer, last year you may recall that you and then Assistant Secretary Vaughan and I discussed the 11-megawatt phosphoric acid fuel cell technology. In fact, we discussed it twice last year, first at a hearing on the fiscal 1985 deferral package, and then secondly, at a hearing on the 1986 budget request. It is now a year later, and I would like to try to update the record on that program.

Mr. BAUER. I remember those discussions.

Mr. AUCOIN. In terms of accomplishments, what has happened with the department's activity on the 11-megawatt fuel cell, can you tell us?

Mr. BAUER. On the 11-megawatt, we have reached agreement with UTC, now IFC, on the Configuration A program, and that should be signed now or very soon in the near future. This has to do with the final test program on that 11-megawatt, Configuration A. We we are funding so many hours, and they will fund so many hours.

On Configuration B, there was $4.5 million——

Mr. AUCOIN. Let me ask you one thing first. Configuration A, is that the fiscal year 1984 money?

Mr. BAUER. Yes.

Mr. AUCOIN. So that is the $11 million that was appropriated in fiscal year 1984?

Mr. BAUER. And there was some 1985, I believe, also, Mr. Congressman.

Mr. AUCOIN. Now, in 1985, $9 million was appropriated. Some of that you say goes to Configuration A; is that right?

Mr. BAUER. A, and then there was—I hope my memory doesn't fail me—there is $4.5 million that is going to be put out this week by NASA for competitive procurement for Configuration B technology.

Mr. AUCOIN. Out of that $9 million?

Mr. BAUER. Yes.

Mr. AuCoin. What do you mean by competitive procurement? It sounds like you are about ready to sign a contract.

Mr. Bauer. No, no, we are going out with a competitive procurement and anyone can bid on that. What happens is it says $9 million for 11-megawatt Configuration B technology. When one looks at CICA, Competition in Contracting, the report language doesn't say a particular contractor, so under the terms and conditions of that, you go competitive. Another way you can do it is you can put it in the Commerce Business Daily and say I am going to award a contract to so-and-so, and if anybody objects you have 40 days to come back and do it.

In that way, if somebody objects, you have lost all that time, so you go out competitively. Anybody can bid, and it says Configuration B. NASA should have released that competitive procurement. I think it is $4.5 million. Let me recheck. Yes.

Mr. AuCoin. Let me read from page 307 of the conference report on that point.

Mr. Bauer. Is this 1985? I was talking about the unobligated 1985 monies.

Mr. AuCoin. This is from the committee report, page 307. There is a paragraph that refers to those same 1985 funds, even though it is the fiscal 1986 year report. It says this: "The managers agree that $2 million in addition to currently unobligated fiscal 1985 funds should be provided for the 11-megawatt fuel cell program to continue inverter and stack technology work through the development of stack Configuration B.

"This funding is a continuation of existing efforts to develop the system and the department should promptly modify the existing contract with International Fuel Cells, IFC * * *"—They are very explicit there—"* * * to include fiscal 1985 funds already appropriated and fiscal 1986 funds provided in this Act."

Did you hear that?

Mr. Bauer. Yes. That $2 million is proposed for deferral.

Mr. AuCoin. But this says plus the 1985 funds.

Mr. Bauer. For the 11-megawatt——

Mr. AuCoin. For the 11-megawatt.

Mr. Bauer [continuing]. Configuration B.

Mr. AuCoin. Configuration B. Look at page 307. It specifies, the committee specifies, that the department should promptly modify the existing contract to that end with International Fuel Cells, IFC. So I think you are heading or about ready to head in the wrong direction, based on the direction that Congress gave you. Let me further indicate that I am reminded that the reason we gave you $2 million in 1986 to go with the 1985 funds was that we wanted to test the 1985 funds out and get it out quickly.

Mr. Bauer. And work on the converter.

Mr. AuCoin. Yes, and we were very explicit.

Mr. Bauer. Thank you for that enlightenment. I will go back and revisit that, after this hearing. A commitment.

Mr. AuCoin. I appreciate that. Would you notify the committee and me as well?

Mr. Bauer. Sure.

Mr. AuCoin. As to when that contract is finally assigned?

Mr. **Bauer**. We will notify you as to final disposition, on or before.

Mr. **AuCoin**. That is all I have, Mr. Chairman.

Mr. **Bauer**. Thank you, sir.

[The information follows:]

11-MW Phosphoric Acid Fuel Cell

The competitive procurement for the support of the development of configuration "B" for the 11-MW phosphoric acid fuel cell has been re-examined. This procurement, which is being issued by the NASA Lewis Research Center, has been announced in the Commerce Business Daily on March 8, 1986. The timing for reissuing the procurement as a sole source would be such that a significant delay would result from following the required steps for a sole source procurement as dictated by the Competition in Contracting Act.

It should be noted that on July 29, 1985, in a meeting at the Morgantown Energy Technology Center involving METC, NASA and IFC senior management (Mr. William Leukel, Vice President and Mr. Charles Cannon, Manager of Washington Operations), the subject of an appropriate contractual vehicle for the follow-on work was discussed. At that meeting, IFC agreed to the competitive procurement route for the effort. Since that time the procurement has been in process.

For these reasons, the Department has determined that the appropriate action is to proceed with the competitive procurement.

CLEAN COAL TECHNOLOGY

Mr. **Murtha**. Let me ask you about the Clean Coal Technology. What preparations are being made for evaluating proposals to be received?

Mr. **Bauer**. We have established the formal Source Evaluation Board. The chairman and the voting members, advisers, technical, management and business committees are in place. I believe, it was the fiscal year 1985 supplemental saying the department should get prepared for this, in the event money is appropriated.

The SEB has participated in a preproposal conference at the departmental auditorium. They are now in the process of doing their final actions, and getting ready for the proposals which will be here by April 18th. Each of the proposers were asked to include a statement which could be released to the public on their proposals, so we will put together a short synopsis of what each one allows us to say publicly, and then we will move on to selection on or before August 1st. After that, there will be the submission of the report to Congress as required by the law.

Mr. **Murtha**. Who will make the evaluations?

Mr. **Bauer**. The Source Evaluation Board, and I have a role in that solicitation, and I would not want to appear to be nonresponsive to you, but because of my role, some questions I will have to defer, Mr. Chairman.

Mr. **Murtha**. And the other questions we have for the record. We have a number of questions for the record on coal liquefaction.

Mr. **Bauer**. Yes, Mr. Chairman.

WILSONVILLE COAL LIQUEFACTION PLANT

Mr. **Murtha**. I would like to place in the record of the subcommittee a letter from S.R. Hart, Jr., of Southern Company Services concerning the Wilsonville Coal Liquefaction Pilot Plant. Funds for this project are being deferred. The letter states, "The contract for the operation of the Wilsonville facility is to expire on September 30, 1986." Is that accurate?

Mr. **Bauer**. Yes, Mr. Chairman; but the funds are deferred, and we are only funding it until March 20.

Mr. **Murtha**. It further states that the Electric Power Research Institute is a co-funder that has committed its funds for operations and capital costs as agreed to in its memorandum of agreement with DOE. Do you have such a memorandum?

Mr. **Bauer**. That program has been under a memorandum of understanding for years, in which DOE provides two-thirds and EPRI provides one-third.

Mr. **Murtha**. Once again, it states, "Plans for orderly completion of the work by the end of the contract period have been made and approved by both DOE and EPRI." Are you aware of such plans?

Mr. **Bauer**. Yes. They developed program plans for an annual and semiannual basis. What has happened here, Mr. Chairman, is—again, it is a decision on our part. We have run it at different temperatures and different pressures on different coals and we have had some successful runs even on the close coupling. We have what we believe is sufficient data. Drawing a point at three points doesn't make a straight line, but six sure do, and so what price does one pay for a few more points on the line in terms of confidence in that data? And so when we got to the fiscal constraint issue, we took a look at the technologies and the data that were available and we said there is sufficient data available on that.

Mr. **Murtha**. The letter also states that parts of EPRI's funds for capital improvements have already been committed. Is that true?

Mr. **Bauer**. I do not know the answer for that. I will check and provide that for the record. I know that was true in 1985. I don't know for 1986.

[The information follows:]

Southern Company Services, Inc.
Post Office Box 2625
Birmingham, Alabama 35202
Telephone 205 877-7881

S. R. Hart, Jr.
Vice President

the southern electric system

February 26, 1986

The Honorable Sidney R. Yates, Chairman
Subcommittee on Department of Interior
and Related Agencies
Committee on Appropriations
U. S. House of Representatives
Washington, D. C. 20515

Dear Mr. Yates:

This letter is to express my concern about the impact of the Department of Energy's (DOE) proposed deferral of fiscal year (FY) 1986 funds appropriated to Fossil Energy Research and Development. I am especially concerned about the impact of this proposed deferral on the Wilsonville Advanced Coal Liquefaction Research and Development Facility (DOE Contract No. DE-AC22-82PC50041) for which I am the responsible officer in Southern Company Services (SCS). For reasons stated below, I urge that the proposed deferral be rejected.

The contract for operation of the Wilsonville facility is to expire on September 30, 1986. The Electric Power Research Institute (EPRI) is a cofunder of the Wilsonville project and has committed its funds for operations and capital costs as agreed to in its Memorandum of Agreement with DOE. Plans for orderly completion of the work by the end of the contract period have been made and approved by both DOE and EPRI. A portion of EPRI's capital funds has already been committed for modifications to ensure that the best possible data will be obtained in the final months of operation. The proposed deferral of funds would result in an early termination of the research program and a waste of the EPRI capital funds.

The preliminary results from current operations in the close-coupled integrated two-stage liquefaction process (CCITSL) are very encouraging. As I stated in my letter of March 11, 1985 to you, the CCITSL process offers the potential to significantly improve the economics of two-stage liquefaction by having lower capital and operating costs, lower catalyst usage rates, higher product recovery, and fewer process vessels.

The proposed deferral of funds would cause the research program at Wilsonville to end several months early. Several key sets of data and some summary reports which would bring together the information on the outstanding developments in two-stage liquefaction which have been made at Wilsonville would not be available

I want to emphasize that I am not asking for additional funds or for new contracts. I have presented a consistent view of the Wilsonville program in testimony before your Subcommittee for the past two years; that is, that the program would be brought to an orderly termination at the end of FY 1986. I am requesting that the DOE honor its contractual commitments so that the Wilsonville program can be completed as planned.

I sincerely appreciate your review of this matter and your continued support of the Wilsonville program. I will happy to respond to any questions from you or your Subcommittee.

Sincerely,

S.R. Hart, Jr.

S. R. Hart, Jr.

sam:0770e

cc: Members of Subcommittee on Interior
and Related Agencies

EPRI'S COMMITMENT TO WILSONVILLE

A supplemental agreement between DOE and EPRI, covering the FY 1986 Wilsonville operating period, was signed on October 1, 1985, committing $1,900,000 of EPRI CY 1986 funds for operation and capital improvements. These funds have been and continue to be used in accordance with the agreement.

Mr. **Murtha**. Also answer two other questions that we have provided for the record.

PHOSPHORIC ACID FUEL CELLS

We are talking here about fuel cells. You defer the last portion of the on-site 40 kilowatt phosphoric acid fuel cell. Why is that?

Mr. **Bauer**. On site? That is the 200-kw unit, I believe, with IFC, and as I recall, we looked at that program and concluded that the performance goals for the 200-kw system had been achieved, and what was left was the integration of the subsystems, and furthermore, there was a recent article in one of GRI's magazines that says that IFC is prepared to commercialize that fuel cell now, and all that is needed now is they are looking for industry to help them make this possible.

Mr. **Murtha**. Has GRI put up their portion of the funds?

Mr. **Bauer**. Yes, they have, Mr. Chairman.

Mr. **Murtha**. Isn't it reasonable to expect you to put up your portion of the funds?

Mr. **Bauer**. Well, we looked at the status of the technology and where it was, and the appropriate use of taxpayer dollars, and came to the conclusion we are at the point where—because GRI put up their money, that is good, because that fuel cell has application to the gas research industry, although it could be seen as potentially backing out on an agreement.

Mr. **Murtha**. But the point is when a private organization puts up their funds, they are serious about it?

Mr. **Bauer**. Yes, they are.

Mr. **Murtha**. Mr. Regula.

Mr. **Regula**. I reserved some questions for the record.

GEORGETOWN AFB

What is the status of the tube replacement effort at Georgetown?

Mr. **Bauer**. I think that once and for all we are going to fix Georgetown. The tubes are in, and if everything is well, by the end of the month, we are going to start it up.

Mr. **Murtha**. Glad to hear it.

Mr. **Regula**. Mr. McDade will be happy.

Mr. **Bauer**. And I won't have to go to any more retreats.

Mr. **Murtha**. Does the gentleman from Oregon have any additional questions?

Mr. **AuCoin**. No, I don't.

Mr. **Murtha**. Thank you very much, Mr. Secretary. Answer the additional questions for the record.

Mr. **Bauer**. I will be pleased

[Questions and answers submitted for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Fossil Energy R&D Budget

Question: Why, in the face of all the disincentives for industrial investment in fossil energy programs, beyond normal oil and gas production, are you so drastically reducing your budget?

Answer: We believe that the $150.1 million requested for Fossil Energy R&D for FY 1987 represents the proper balance between maintaining a strong R&D program while recognizing the serious national budget deficit problem. Furthermore, increased usage of any fuel source is not tied directly to the amount of R&D funding dedicated to it.

It should be noted that in addition to the $150.1 million requested for the technology base R&D and the cooperative R&D venture pool programs, approximately $149.1 million is available in FY 1987 to conduct cost-shared construction and operation of clean coal technology projects to demonstrate the feasibility of future commercial applications of these technologies. We believe that when all of the coal-related, Federally-sponsored programs are considered, a viable, effective R&D program has been requested for FY 1987.

General

Question: Is the oil industry, which also participates in other fossil energy R&D, increasing its research and development funding, or decreasing it?

Answer: According to figures published by the Energy Information Administration, "Performance Profile of Major Energy Producers," DOE/EIA-0206/(84), the worldwide fossil energy research and development expenditures of the top 26 energy companies held stable from 1981 through 1984 at $1.5 billion to $1.6 billion. However, press reports, containing mostly anecdotal evidence and informal surveys, and our own informal contacts with industry, suggest that as a result of declining crude oil prices, the future trend in oil industry R&D funding will be generally downward.

Question: Is the electric utility industry, through the Electric Power Research Institute, increasing or decreasing its R&D?

Answer: The EPRI Finance Committee approved a 1986 budget during the week of March 3, 1986. The budget must still be approved by the EPRI Board of Directors. Its 1987 budget will not be finalized until December 1986, and is not yet available. The total proposed 1986 EPRI budget for fossil fuel related R&D is lower than last year.

A comparison by area for 1985 and 1986 follows:

	($ in millions)	
	1985 Actual	1986 Proposed
Coal Combustion Systems	$ 62.1	$ 63.2
Advanced Fossil Power Systems	30.4	12.5
Fuel Cells	8.0	4.1
Total	$100.5	$ 79.8

Question: Is the coal industry a major participant in energy R&D? Is its role increasing?

Answer: There is no good measure of the extent to which the coal industry is a participant in energy R&D. Not only do many companies consider such information proprietary, but in some of the companies there is no clear cut definition of the term R&D. However, we believe that coal industry participation in the FE program has increased since 1985, including increased cost sharing.

Clean Coal Technology Program

Question: You are agreeing to carry out the "clean coal technology" program initiated by Congress in order to assist in the demonstration of near-commercial technology.

Why are you agreeing to that while drastically reducing your support for the longer range portion of R&D through so-called "proof-of-concept"?

Answer: As stated earlier, the Department believes that the FY 1987 request for Fossil Energy R&D Programs represents the proper balance between maintaining a strong research and development program while recognizing the serious national budget deficit problem. Furthermore, increased usage of any fuel source is not tied directly to the amount of R&D funding dedicated to it. Finally, when all Fossil Energy-related, federally-sponsored programs are considered, i.e., the Fossil Energy Technology Base R&D Program, the Clean Coal Technology Program, and the Cooperative R&D Venture Pool Programs, a viable, effective, total Fossil Energy Research and Development program has been requested for FY 1987.

Fossil Energy R&D Budget

Question: Your overall budget appears to be drastically reducing the amount of research in cooperation with industry. Is that so? Why?

Answer: The Administration believes that a successful applied technology R&D program requires focusing of such R&D in areas supportive of likely industry commercialization of new or improved products or processes. The Department is exploring ways to increase the willingness and ability of the private sector to cost-share, thus increasing the amount of research per Federal dollar. To meet this objective more effectively than had been done in the past, a cooperative R&D venture pilot program was established to create a funding pool to be used to participate in industry-formed cooperative R&D ventures. The proposed joint venture program will be initiated in FY 1987 as a "pilot effort" on extraction technologies and has requested funding of $12.5 million. If it is found to be an attractive approach, this venture-pool concept may eventually result in the transformation of much of Fossil Energy's industry-performed research into this mode. The funding pool will be used to participate in industry-formed R&D cooperative ventures consistent with the Cooperative R&D Act of 1984. Proposed ventures will be evaluated and judged by the government in terms of their responsiveness to national goals and objectives as well as the quality and value of the proposed venture. The approach will allow industry to join with the government in applied research and development activities that may serve to achieve our energy goals and to reduce those traditional barriers that limit the financial and technical cooperation between the private and the public sectors (e.g., patent positions, proprietary rights, anti-trust concerns, etc.). Ideally, the private sector will offer partnership opportunities to DOE, and the Department will be in a position to choose where to invest its venture pool resources.

The joint venture concept is intended to give the private sector greater flexibility, commensurate with their increased financial responsibility, in proposing specific technologies or U.S. resource development strategies and establishing project priorities. This approach is also intended to improve the transfer of any taxpayer-supported research and technology to a strong, internationally competitive U.S. industry and ultimately to transfer it to commerical practice.

General

Question: For the record please show, by major activity, the amounts in FY 1985, FY 1986 before deferrals, and FY 1987 that go to: 1) in-house overhead, 2) in-house R&D, 3) "defederalized" energy technology centers, 4) national laboratories, 5) other federal agencies, 6) universities, and 7) industry.

Answer: The following chart, Distribution of Fossil Energy R&D Funds, provides, by major activity, the amounts in FY 1985 (actual), FY 1986 (estimated final activity level) and FY 1987 (estimated initial allocation) that go to: 1) in-house overhead, 2) in-house R&D, 3) "defederalized" energy technology centers, 4) national laboratories, 5) other federal agencies, 6) universities, and 7) industry.

DISTRIBUTION OF FOSSIL ENERGY R&D FUNDS

FY 1985 BUDGET AUTHORITY
OPERATING EXPENSES ($000)

	CTCP	1/ ARTD	1/ LIQUE	COMB	FC	HE	UCG	MHD	1/ SGASIF	UGR	APT	EOR	SHALE	2/ PD	TOTALS
In-house Overhead	0	0	0	0	0	0	0	0	0	0	0	0	0	43,132	43,132
In-house R&D	5,162	4,794	3,350	2,941	0	345	95	0	2,153	1,479	0	950	1,741	0	23,010
"Defederalized" Energy Technology Centers	1,400	2,210	900	1,400	0	0	1,881	0	1,100	282	2,943	5,270	3,453	0	20,839
National Laboratories	3,736	14,829	3,681	343	1,617	270	2,034	1,058	3,868	4,437	1,161	832	5,250	0	43,116
Other Federal Agencies	165	562	0	15,000	1,250	0	0	0	1,318	922	228	0	146	0	19,591
Universities	3,735	8,039	2,041	1,874	0	266	17	9,188	999	574	636	3,025	553	0	30,947
Industry	20,593	9,245	15,627	8,534	37,605	10,969	1,678	20,475	22,332	2,448	396	1,625	3,485	1,802	156,814
Total	34,791	39,679	25,599	30,092	40,472	11,850	5,705	30,721	31,770	10,142	5,364	11,702	14,628	44,934	337,449

1/ ARTD includes $8,875,000 that are associated with the Coal Liquefaction Program and the Surface Coal Gasification Program ($5,511,000 for Processes Liquefaction (Advanced Research) and $3,364,000 for Processes Gasification (Advanced Research) in FY 1985.

2/ The Program Direction (PD) amount is less $400,000 which was retained by the Controller as a program offset and less $846,000 which was proposed for rescission.

FY 1986 BUDGET AUTHORITY
OPERATING EXPENSES ($000)

	CTCP	ARTD	LIQUE	COMB	FC	HE	UCG	MHD	SGASIF	UGR	APT	EOR	SHALE	1/ PD	TOTALS
In-house Overhead	0	0	0	0	0	0	0	0	0	0	0	0	0	47,347	47,347
In-house R&D	6,018	2,841	4,367	3,190	0	911	0	200	2,934	1,462	0	842	0	0	22,765
"Defederalized" Energy Technology Centers	879	913	1,543	1,254	0	429	1,434	0	1,472	191	2,351	4,540	3,968	0	18,974
National Laboratories	2,331	10,184	3,036	535	573	0	1,062	359	3,552	4,576	919	812	3,631	0	31,570
Other Federal Agencies	138	390	60	15,031	50	0	0	0	764	1,100	38	0	99	0	17,670
Universities	3,590	10,142	2,610	1,890	0	290	10	8,670	1,230	500	690	1,758	480	0	31,860
Industry	18,994	9,379	20,004	7,213	33,434	10,684	1,566	18,488	31,371	674	1,525	3,502	3,958	4,787	165,579
Total	31,950	33,849	31,620	29,113	34,057	12,314	4,072	27,717	41,323	8,503	5,523	11,454	12,136	52,134	335,765

1/ The PD amount is less $511,000 for the Alaska Pipeline and less $511,000 for Section 515.

NOTE: These are preliminary dollars before the deferrals but include the Gramm-Rudman-Hollings reductions. The distribution of this data is not available by location before the deferrals.

FY 1987 BUDGET AUTHORITY
OPERATING EXPENSES ($000)

	CTCP	ARTD	LIQUE	COMB	FC	HE	UCG	MHD	SGASIF	UGR	APT	EOR	SHALE	COOP R&D VENTURE POOL	1/ PD	TOTALS
In-house Overhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35,918	35,918
In-house R&D	6,540	2,866	4,145	3,289	0	842	0	0	2,477	1,402	0	309	1,644	0	0	23,514
"Defederalized" Energy Technology Centers	0	955	500	0	0	0	0	0	370	0	1,500	4,000	0	0	0	7,325
National Laboratories	0	8,889	0	0	0	0	0	0	0	3,200	0	0	0	0	0	12,089
Other Federal Agencies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Universities	0	9,100	0	0	0	0	0	0	0	0	0	0	0	0	0	9,100
Industry	11,607	5,414	4,502	5,880	5,000	7,100	0	0	2,751	650	311	175	1,951	12,500	4,082	61,923
Total	18,147	27,224	9,147	9,169	5,000	7,942	0 2/	0	5,598	5,252 2/	1,811 2/	4,484 2/	3,595 2/	12,500	40,000	149,869

1/ The PD amount is less $221,000 for the Alaska Pipeline.
2/ In addition to these funds, these areas are fundable through the $12,500,000 cooperative R&D venture pool shown in a separate column.

NOTE: These are preliminary dollars. There are no specific funds designated in the FY 1987 budget request for WRI and UNDERC.

Question: Why should Congress support an increasing portion of "in-house" activity, which is the least likely to be transferred directly to industry?

Answer: The in-house research programs at the Energy Technology Centers (ETC) have remained relatively constant over the past few years. The in-house research program establishes a technical base that is supplemented and enhanced by industrial, university and national laboratory research. It should be noted that Fossil Energy maintains a very strong technical transfer program at the ETC's to help transfer appropriate technology to the private sector. Technology transfer is accomplished through such activities as program reviews, symposiums and conferences with strong private sector participation, the publication of numerous research articles and fact sheets, and through the maintenance of technical ADP data bases that are accessed by the private sector.

Question: At least $48 million of the $62 million you defer in FY 1986 is for programs the Committee knows are cost-shared. If you are interested in increasing industrial participation in research and development programs, as you say you are in the cooperative venture program, why are you cancelling such cost-shared projects?

Answer: During its deliberations on the FY 1987 President's budget request, the Administration recognized that budget reductions in FY 1986 appropriations were necessary to achieve the Gramm-Rudman targets for deficit reductions in FY 1987.

As a result, a review was conducted of the FY 1986 appropriations to identify possible deferral or rescission candidates. The deferrals submitted by the Administration were chosen for one or more of the following reasons: (1) the projects were too costly; (2) research and development data already exists and the private sector should continue development; (3) adequate funding levels for federal research already exists; or (4) the project was not technically feasible.

Based on these facts, the Administration believes that we are acting in a financially prudent manner in offering these projects for deferral.

Question: What is the likelihood that firms are going to be willing to enter into such cooperative agreements, based on your record of cancelling ongoing, cost-shared activity?

Answer: The private sector is aware of the Department's R&D mission of bringing projects to the proof-of-concept stage so that they can be developed further by the private sector and they are also aware of the Department's reasons for the current deferrals. Based upon the responses received to cost shared competitive solicitations, we believe the private sector is willing to enter into agreements.

Recent experience with the Clean Coal Technology solicitation indicates that many factions in the private sector are anxious to cost share projects with the Federal Government.

Also, the cooperative R&D ventures concept is intended to give the private sector greater flexibility, commensurate with their increased financial responsibility, in proposing specific technologies or U.S. resource development strategies and establishing project priorities. This approach will also improve the transfer of any taxpayer-supported research and technology to a strong, internationally competitive U.S. industry and ultimately to transfer it to the commercial sector. These new incentives coupled with the success the Department of Commerce has experienced with the cooperative R&D ventures program indicate that the private sector will be very receptive to our new approaches.

Fossil Energy R&D Budget

Question: The FY 1987 budget request is lower than any since FY 1974 when it was approximately $114 million for equivalent programs. The amounts for coal research were actually higher in FY 1974 (Office of Coal Research was $94,300,000 versus $82 million for coal in FY 1987). Your request for FY 1985 was about $243 million for fossil energy. What has happened to require a reduction of almost 40% from your previous request?

Answer: The Department believes that the FY 1987 request for Fossil Energy R&D Programs represents the proper balance between maintaining a strong research and development program while recognizing the serious national budget deficit problem. Furthermore, increased usage of any fuel source is not tied directly to the amount of R&D funding dedicated to it. Finally, when all Fossil Energy related, Federally-sponsored programs are considered, i.e. the Fossil Energy Technology Base R&D Program, the Clean Coal Technology Program and the Cooperative R&D Venture Pool Programs, a viable, effective, total Fossil Energy Research and Development Program has been requested for FY 1987.

General

Question: Has industrial R&D increased?

Answer: Obtaining a reliable estimate of private sector expenditures on Fossil Energy Research and Development (R&D) is difficult because many companies consider such information proprietary. The National Science Foundation (NSF) annual survey appears to represent the most comprehensive and carefully designed effort to gather such information. Industry results are available through 1984, which are shown below and indicate a steady rise in fossil energy R&D.

($ in millions)

	1977	1978	1979	1980	1981	1982	1983	1984
Fossil Energy Industrial R&D Expenditures	644	678	788	993	1257	1361	1473	1533

NSF considers R&D for this survey as "basic and applied research in the sciences and engineering and the design and development of prototypes and processes."

Question: Have there been major breakthroughs in R&D?

Answer: While the term "breakthroughs" is difficult to define, there have nonetheless been steady and significant advances in coal R&D within the last year that can be attributed directly to the federal program.

For example, DOE-sponsored research has shown that a commercially-designed cyclone -- a device that separates solid particles from high temperature gases by centrifugal force -- can remove enough of the impurities from hot coal gas to prevent corrosion or deposition within gas turbines. This could be an extremely significant advance in the development of more economical coal-fueled combined cycle power systems.

Likewise, preliminary tests funded in 1985 by the Energy Department revealed the potential for capturing sulfur within the "bed" of a coal gasifier thereby minimizing the need for post-gasification sulfur cleanup and potentially reducing costs.

Other sulfur removal techniques have also benefitted from the investment of federal funds. An innovative technique for cleaning coal combustion gases using a copper-oxide sorbent demonstrated enough promise in small-scale tests to warrant scaleup. If this technique continues to show potential, it could provide an entirely new chemical reaction path for future scrubbers that would not produce the difficult-to-handle wet sludge of more conventional techniques. Similarly, an electron-beam activated scrubber now being tested has shown excellent sulfur and nitrogen capture potential with the added benefit of producing a marketable by-product.

The use of microbes to desulfurize coal also holds potential for a revolutionary approach to pre-combustion coal cleaning. In the mining industry, microbes are used to increase the yield of metals from ores. We are currently sponsoring research on the application of biotechnology to coal processing in the hope of being able to custom design microbial organisms that will have the ability to desulfurize or gasify or liquefy coal at rapid rates under mild processing conditions.

A federally-sponsored research program has also shown that injecting pressure-hydrated lime into a coal-fired boiler can significantly reduce sulfur emissions while using only one-third as much limestone as would be needed if conventional limestone was used. This could provide a viable alternative to installing scrubbers on existing coal plants if air quality standards are tightened in the future.

Other advances have taken place that, while not termed "breakthroughs", could nevertheless increase the likelihood that new coal-based technologies could become commercially competitive earlier than might otherwise be expected. For example, a new two-stage coal liquefaction technique, which closely couples the dissolution and hydrogenation stages without an intermediate ash removal step, has improved yields of high-quality liquid products significantly beyond the limits of more conventional coal liquefaction processes. While the techniques is still unable to compete with other sources of liquid fuels, it could hasten the commercial introduction of coal liquefaction technology if more conventional energy sources become more expensive in the future.

In each of the above examples — and in many others that could be cited — the advances have evolved from a steady progression of scientific and engineering experiments which have contributed to a sound, fundamental knowledge base. While "breakthroughs" may result from this approach, the principle benefit is the establishment of a broad spectrum of scientifically sound, verifiable technical information which industry can use to develop new commercial coal-based applications.

Fossil Energy R&D Budget

Question: What was your request to OMB?

Answer: The OMB request for Fossil Energy R&D was $272,521,000.

Question: What are the major differences?

Answer: The major difference between Fossil Energy's request and OMB's allowance is the decrease in funding for industrial procurements and the initiation of the Cooperative R&D Venture Pool concept. The OMB allowance of $150,090,000 provided $90,090,000 (including program direction funds) for activities that can be considered technology base and which are by and large performed at universities and in energy technology centers and national labs, and $60,000,000 for three aggregated Cooperative R&D Venture Pools intended to fund work performed by industry.

Question: Did you appeal the OMB allowance?

Answer: Fossil Energy did not appeal the dollar amount of the OMB allowance, in recognition of the severe budget deficit. However, we did request that the allocation of the OMB allowance be redistributed to limit the Cooperative R&D Venture Pool to a pilot program. As shown in the answer to a previous question, the distribution of funds equates to $88,167,000 for technology base activities at national labs, ETCs, and universities, and for program direction, and $61,923,000 for industry programs.

Proof-of-Concept Size Facilities

Question: The "clean coal technology" program addresses large scale development in the near term. Your budget seems to address very long term research on a small scale. What happened to your previous commitment to "proof-of-concept" size facilities?

Answer: Fossil Energy is still committed to carrying R&D through to the "proof-of-concept" stage when it is justifiable given other R&D priorities and budget constraints. A number of proof-of-concept projects will not be continued in FY 1987 because sufficient R&D data already exists for the private sector to continue their development. Examples of these projects are Wilsonville, LaPorte, Waltz Mill and Phosphoric Acid Fuel Cells. Accordingly, deferral and rescission notices were transmitted in FY 1986. Newer technologies still in the laboratory may be considered for scaleup to proof-of-concept size when the technology is ready.

Question: In what areas are you proceeding with such facilities?

Answer: The chart provided as the response to the following question indicates which R&D facilities are planned to be funded in FY 1987.

Question: Please provide for the record a list by technology of all "proof-of-concept" facilities you are now supporting, and those you intend to support in FY 1987.

Answer: The list of "proof-of-concept" facilities supported in FY 1986 and those intended for support in FY 1987 follows.

Technology/Facility	Facility Location	Funding Support FY 1986	FY 1987
Control Technology and Coal Preparation			
Flue Gas Cleanup			
Fluidized Bed Copper Oxide	Commonwealth Edison Kincaid, IL	X	X
E-Beam/Ammonia	Indianapolis Power and Light, Indianapolis, IN	X	
SO_2/NO_x Spray Dryer	Argonne National Lab	X[1/]	
Dry Lime Hydrate Duct Injection	Ohio Edison Co. Toronto, OH	X	X
Rotary Atomizer Induct Spray Drying	Ohio Power Co. Beverly, OH	X	X
Dual Fluid Nozzle Induct Spray Drying	Consumer Power Co. Michigan	X	X
Coal Preparation			
Advanced Physical Coal Cleaning-Electrostatic	Electric Power Research Institute, Homer City, PA	X	X

Technology/Facility	Facility Location	Funding Support FY 1986	Funding Support FY 1987
Advanced Physical Coal Cleaning-Microbubble	EPRI Homer, City, PA	X	X
Combustion Systems			
PFB Combustion Advanced Hot Gas Cleanup Devices	New York Univ.	X	X
Grimethorpe 24 MW PFB Combustion Test Facility	Yorkshire, England	X	X
Coal Liquefaction			
Indirect Liquefaction Liquid Phase Methanol PDU	LaPorte, TX	X[1]	
Advanced Process Development Wilsonville Advanced Coal Liquefaction Facility	Wilsonville, AL	X[1]	
Surface Coal Gasification			
Advanced Process Development Advanced Multi-Purpose Research Reactor	Institute of Gas Technology, Chicago, IL	X	X
Bench Scale, Entrained Flow, High Pressure Gasifier	College of Eng. Science and Technology - Combustion Lab, BYU, Provo, UT	X	Supported by prior yr. funds
Bench Scale Two Stage Entrained Flow Reactor	AVCO Everett Research Lab, Everett, MA	X	
Wet Carbonization Test Facility	ICT, Chicago, IL	X	
Stirred Fixed-Bed Gasifier PDU	Morgantown Energy Technology Center, Morgantown, WV	X	X
Advanced Gasification Concepts Test Facility	METC, Morgantown, WV	X	X
Mild Gasification Reactor	United Coal Research Corp., Bristol, VA	X[2]	

1/ Contracts funded through April 20, 1986, balanced proposed for deferral.

2/ Project was not initiated and funds were deferred.

Technology/Facility	Facility Location	Funding Support FY 1986	FY 1987
2-Inch-ID Fluidized Bed Reactor	Institute of Gas Technology, Chicago, IL	X	X
Great Plains Project Great Plains Coal Gasification Plant	Beulah, ND	X	X
Systems Engineering Concepts KILnGAS Demo Gasifier	Wood River, IL	X	Supported by prior yr. funds
Process Evaluation Facility (PEF)	General Electric Corporate Research and Development Center Schenectady, NY	X[3/]	
Agglomerating-Pressurized Fluidized-Bed Gasifier PDU	Waltz Mill Test Site Madison, PA	X[4/]	
Environ. & Engrg. Analysis Slagging Fixed-Bed Gasifier PDU	University of North Dakota Energy Research Center, Grand Forks, ND	X	X
Underground Coal Gasification			
Gasification Technology Development Rocky Mountain Energy 1 UCG field site	Hanna, WY	X	

[3/] Existing contract will be completed on February 28, 1986. FY 1986 funds proposed for deferral.

[4/] Contract funded through early May 1986 and balance of FY 1986 funds proposed for rescission.

General

Question: Why are you not supporting long-term technology such as MHD or coal liquefaction?

Answer: The Department is supporting a viable, balanced technology-based Coal Liquefaction Research and Development Program in FY 1987. Funding requests for this program is $9,147,000 and encompasses advanced research efforts in liquefaction processes techniques, direct and indirect liquefaction technology base efforts, and support studies and environmental research efforts. It should be noted that funds have not been requested in FY 1987 to operate either the La Porte liquid phase methanol PDU or the Wilsonville two-stage liquefaction pilot plant. The Department believes that sufficient research data is available as a result of technology development for the private sector to continue with these efforts.

No funding has been requested for the MHD program in FY 1987 because the Department believes that the cost of continuing the MHD program is not affordable in light of current fiscal constraints. MHD requires a very expensive development program, following proof-of-concept testing, to bring the technology to the point when utilities can decide whether it is a cost effective option for retrofits or new capacity. The Department believes that its funds can be more effectively utilized in other areas.

Misrepresentation of Activity

Question: Throughout your budget justification and the key activity summaries provided by the Department and printed by the Committee, the Department misrepresents the scope of its activities. In every area where you are deferring funds you write your justification as if you had accomplished this work.

Would you please provide for the record every instance in both the justification and the key activities summaries where you have done so?

Answer: The following activities described in the FY 1986 Accomplishments section of the FY 1987 budget justification, as being initiated, continued or completed, have been deferred or proposed for rescission. Consequently, these activities may not be completed during FY 1986.

CONTROL TECHNOLOGY AND COAL PREPARATION

Page 30: Coal Preparation

- Completed coal preparation research activities at Southern Illinois University.
- Completed research on coal characterization, chemical cleaning, physical cleaning and ancillary operations at Ames National Laboratory.
- Completed research on microbubble flotation technology advanced concepts.

Page 31: Flue Gas Cleanup

- Completed research on potential process modifications for achieving combined NO_x/SO_x control (dry scrubber process).

Gas Stream Cleanup

- Initiated direct coal fired turbine studies PRDA.

ADVANCED RESEARCH AND TECHNOLOGY DEVELOPMENT

Page 41:

- Continued generic electro-chemistry research pertinent to molten carbonate and solid oxide fuel cells.
- Conducted research on high temperature corrosion, erosion, joining and mechanical properties of heat exchanger materials; reduced the level of effort on corrosion, erosion, and mechanical properties of structural ceramics and refractories.
- Explored unique methods for measurement of multiphase flow parameters such as velocity, solids content, and viscosity; and for identifying chemical species by advanced methods such as plasma spectrographic techniques.

COAL LIQUEFACTION

Page 53: Indirect Liquefaction

- Completed research on liquid phase methanol synthesis with operation of and data acquisition from the PDU at LaPorte, Texas.

Direct Liquefaction

- Continued laboratory and bench scale research on co-processing heavy oil and coal.
- Continued bench scale research on the close coupled direct catalytic process.
- Completed proof-of-concept testing of staged liquefaction at Wilsonville.

COMBUSTION SYSTEMS

Page 62: Advanced Combustion Technology

- Initiated PRDA for coal fired systems for light industrial, commercial/institutional and residential application.

FUEL CELLS

Page 70: Phosphoric Acid Systems

- Continued technology development of water-cooled on-site systems; performed verification tests of prototype stack and plant subsystems.
- Initiated testing of 25 kW on-site system including dielectric-cooled stack, fuel processor and inverter.
- Continued inverter and stack technology work on the 11 MW water-cooled electric utility system through development of stack configuration "B".

- Continued electric utility R&D with air-cooled stacks for a 7.5 MW system; began tests of 25 kW stacks and tests of 100 kW engineering model stack.

Molten Carbonate Systems

- Completed Energy Research Corporation's direct fuel cell technology in smalls stacks.
- Initiated development of a contaminant resistant fuel cell capable of processing gases containing sulfur and chlorine.

Advanced Concepts

- Continued R&D effort at Westinghouse with fabrication and initial tests of 5 kW preprototype module.

HEAT ENGINES

Page 75:

- Initiated research activities, at a reduced level, related to FY 1985 PRDA for coal fired gas turbine major system component development to provide selected integrated systems test validations by a target date of 1990-1992. The contracts to be structured so as to allow completion of specific portions of the work commensurate with available funds.

MAGNETOHYDRODYNAMICS

Page 87:

- Awarded cost-shared seed recovery/regeneration contract and initiated bench-scale testing.
- Awarded cost-shared contract for feasibility and conceptual design study of a coal-fired MHD retrofit.
- Awarded cost-shared contract for an integration/mission contractor.
- Awarded cost-shared contract for a prototypical 50 MW (thermal) coal-fired combustor.
- Awarded cost-shared contract for a prototypical long-duration channel.

SURFACE COAL GASIFICATION

Page 92 and 93:

- Completed a cooperative program investigating the pressurized ash agglomerating fluidized-bed coal gasification integrated system for combined cycle electric power production or other industrial uses (including hot gas cleanup and hot particulate removal as part of the integrated system).
- Completed reactivation of fixed-bed gasification PDU at METC.

- Completed studies on performance of fixed-bed gasifier, hot gas cleanup unit and turbine test stand during integrated operation under dynamic as well as steady state operating conditions.

OIL SHALE

Page 119:

- A report on the first year effort to expand the technology base for moving-bed hydroretorting of Eastern shales, including fines utilization, is expected to be prepared by HYCRUDE, Inc.
- Completion of a report by the University of Alabama Mineral Resources Institute on assessment of U.S. oil shales amenable to beneficiation followed by hydroretorting. Three of the most promising shales are to be selected for further testing.
- Initiate and complete studies to determine research needs and recommended tasks/activities for implementation of an oil shale extraction research program through the Idaho Operations Office.

Also provided is a copy of the pages from the Fossil Energy R&D key activity summary exhibit which has been revised to reflect rescissions and deferrals. The revisions are underlined.

DEPARTMENT OF ENERGY
FY 1987 CONGRESSIONAL BUDGET REQUEST
FOSSIL ENERGY RESEARCH AND DEVELOPMENT
CONTROL TECHNOLOGY AND COAL PREPARATION
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Coal Preparation	Continued low rank coal hot water drying. ($450)	Completed testing of hot water drying PDU and low rank coal fine coal cleaning. ($96)	No activity. ($0)
	Continued research on Gravimelt and microwave chemical coal cleaning processes. ($340)	Completed testing of Gravimelt and microwave 20 lb/hr bench scale reactors. ($1,922)	Complete design of pre-proof-of-concept Gravimelt chemical coal cleaning system. ($1,000)
	No activity. ($0)	Issued PRDA to identify and investigate advanced concepts for chemically modified coals. ($2,286)	Continue investigation of advanced concepts for chemically modified coals. ($1,300)
	Initiated joint DOE/EPRI advanced coal cleaning program. ($3,500)	Continued joint DOE/EPRI advanced physical coal cleaning development and test program with installation and test of two advanced concepts. ($538)	Continue joint DOE/EPRI advanced coal cleaning development and test program. ($1,000)
	Initiated research on microbial desulfurization of coal. ($200)	Identified candidate microbes and techniques for removal of organic sulfur from coal. ($676)	Continue research to optimize techniques for microbial removal of organic sulfur from coal. ($1,000)
	Continued research activities at Southern Illinois Univ. ($980)	Completed research activities at Southern Illinois Univ. ($1,434) $1,322,000 of the total funding of $1,434,000 for this research has been deferred in FY 1986.	No activity. ($0)

CONTROL TECHNOLOGY AND COAL PREPARATION (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Coal Preparation (cont'd)	Continued coal cleaning research at Ames National Laboratory. ($980)	Completed coal cleaning research activities at Ames National Laboratory. ($1,070) $588,000 of the total funding of $1,070,000 for these activities has been deferred in FY 1986.	No activity. ($0)
	No activity. ($0)	The $714,000 for microbubble flotation technology research has been deferred in FY 1986. ($714)	No activity. ($0)
	Funds appropriated for a laboratory scale demonstration of purged carbon were approved for deferral by Congress. ($983)	Funds deferred in FY 1985 were used to offset FY 1986 appropriation requirements. ($0)	No activity. ($0)
	Continued efforts on ultrasonic comminution and dewatering. ($250)	Completed research on ultrasonic comminution and fine coal dewatering. ($480)	No activity. ($0)
	Initiated efforts on advanced physical fine coal cleaning concepts. ($1,282)	Completed contracted efforts on advanced physical fine coal cleaning concepts. ($1,484)	No activity. ($0)
	Continued research on ultrafine coal characterization and process economics. ($450)	Continued research on the chemical and physical characterization of ultrafine coal and process economics. ($456)	Continue ultrafine coal characterization and process economics. ($500)
	Initiated research on the beneficiation of chemically modified coals. ($600)	Continued research on the beneficiation of chemically modified coals and initiated advanced concepts for chemical coal cleaning, and organic sulfur chemistry. ($480)	Continue in-house research on chemical coal cleaning, and fundamental organic sulfur chemistry. ($500)

CONTROL TECHNOLOGY AND COAL PREPARATION (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Flue Gas Cleanup (cont'd)	Completed bench scale evaluation of the five PRDA processes. ($425)	No activity. ($0)	No activity. ($0)
	Funds appropriated for a utility scale test of the Glo-Klen combustion catalyst were approved for deferral by Congress. ($1,967)	Funds deferred in FY 85 were used to offset FY 86 appropriation requirements. ($0)	No activity. ($0)
	Initiated Glo-Klen testing. ($150 of prior year funds)	Completed testing of the Glo-Klen catalysts at lab scale using the same prior year funds.	No activity. ($0)
	Continued research on fine particle control technology. ($100 of prior year funds)	Completed fine particulate control technology research. ($288)	No activity. ($0)
	Initiated evaluation of combined NOx/SOx control in a dry scrubber process. ($1,229)	Completed dry scrubber evaluation at ANL in Ill. ($1,147) $633,000 of the total funding of $1,147,000 for this evaluation has been deferred in FY 1986.	No activity. ($0)
Gas Stream Cleanup	Continued determination of key critical component problems for sub-pilot scale PFBC cleanup techniques for removal of alkalies and particulates. ($1,400)	Completed subpilot testing at NYU of candidate PFBC particulate removal devices; terminated program definition phase for selecting cleanup devices for PFBC system integration POC testing. ($1,457)	No activity. ($0)
	Completed bench scale tests for alkali control and removal from PFBC combustors for acceptable turbine operation. ($605)	Terminated sub-pilot scale alkali control tests for PFBC power systems. Work was performed at ANL in Ill., and Westinghouse in Pa; initiated alkali combustion chemistry research. ($240)	Continue alkali combustion chemistry research. Work will be performed by MRI in Kansas. ($350)

CONTROL TECHNOLOGY AND COAL PREPARATION (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Gas Stream Cleanup (cont'd)	Conducted in-depth economic/systems analysis for PFBC alkali and particulate removal devices. ($239)	Continued economic/systems analysis for PFBC particle control systems. Work was performed by Gilbert Commonwealth in Pa. ($75 of prior year funds)	No activity. ($0)
	Conducted lab/bench scale coal-fired combustor tests of selected advanced PFBC particle cleanup systems to determine concept feasibility. ($540)	Terminated tests of second generation advanced PFBC particulate cleanup concepts. ($391)	No activity. ($0)
	No activity. ($0)	The $1,618,000 for direct coal fired turbine studies has been deferred in FY 1986. ($1,618)	Complete PRDA for direct coal fired turbine studies. ($1,234 of FY 1986 funds)
	Continued field tests of selected concepts for control of trace system contaminant species through combustor modification techniques. ($75 of prior year funds)	Continued process modification control R&D for trace contaminants. ($539)	Continue process modification R&D for trace contaminants. ($75)
	Initiated SO2 control tests for direct-fired turbine power systems. ($700)	Determined concept feasibility of SO2 removal with selected sorbents. ($288)	Continue R&D for sulfur removal with selected sorbents. ($788)
	No activity. ($0)	Initiated direct-fired turbines particulate removal tests. ($192)	Continue process modification R&D for direct-fired turbine. ($1,000)
	Continued testing zinc ferrite desulfurization process on another type of gasifier. ($410)	Completed zinc ferrite sorbent testing at sub-pilot scale. Work performed by KRW in Pa. ($1,081)	No activity. ($0)

ADVANCED RESEARCH AND TECHNOLOGY DEVELOPMENT (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Direct Utilization (continued)	Continued investigations of separations mechanisms before, during and after combustion, including comminution, beneficiation, and separation of pollutants, alkalies and trace impurities from hot and cold gas streams. ($1,004)	Performed research on processes relevant to coal beneficiation (e.g., comminution, extraction of sulfur, mineral matter, nitrogen and alkalies) and the control and removal of pollutants during and after combustion. ($1,793)	Reduce research on separation mechanisms relevant to the coal fuel cycle, from coal beneficiation to the removal of environmentally deleterious products of combustion. ($1,127)
	Continued generic electro-chemistry research pertinent to molten carbonate and solid oxide fuel cells; concluded research on generic phosphoric acid fuel cell studies. ($1,909) Funds appropriated for private sector phosphoric acid fuel cell study were approved for deferral by Congress. ($983)	Performed generic electro-chemistry research and conducted fundamental studies pertinent to molten carbonate and solid oxide fuel cells. ($1,216) $667,000 of the total funding of $1,216,000 has been deferred in FY 1986. Corrosion studies at Argonne will not be conducted.	Reduce generic electrochemistry research and research on fundamental aspects of molten carbonate and solid oxide fuel cells. ($850)
Materials	Continued research on high temperature corrosion, mechanisms of fracture in structural ceramics composites, mechanisms of deterioration of refractory linings in gasifiers and boilers, hydrogen effects and erosion and wear; funded research at INEL on strategic materials to complement Bureau of Mines programs. ($7,320) Funds appropriated to restore the materials program to the FY 1984 level were approved for deferral by Congress. ($413)	Reduced research on high temperature corrosion, erosion, joining and mechanical properties of heat exchanger materials; maintained a consistent level of effort on corrosion, erosion, and mechanical properties of structural ceramics and refractories. ($6,899) $952,000 of the total funding of $6,899,000 has been deferred in in FY 1986. Strategic material research at INEL will not be expanded as planned.	Reduce mechanistic research necessary to allow development and use of new corrosion and erosion resistant alloys, ceramics and refractories for use in coal conversion and utilization systems. ($5,860)

ADVANCED RESEARCH AND TECHNOLOGY DEVELOPMENT (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Technology Base Synthesis	Continued support for international activities, crosscutting research, and technical assessment studies. ($885)	Continued analyses, studies and technical evaluations in support of FE international activities; provided seed funding for new initiatives; identified advanced research needs. ($779)	Continue analyses and studies to integrate and coordinate research and exploratory development activities, to identify advanced research needs, to support international collaborative research activities in FE, and to provide seed funding for new advanced research initiatives. ($800)
Instrumentation, Control & Diagnostics	Continued development of methods for measuring chemical species. and completed optical port design. ($1,500)	Explored unique methods for measuring multiphase flow parameters such as velocity, solids content, and viscosity; and for identifying chemical species such as plasma spectrographic techniques. $477,000 of the total funding of $2,056,000 has been deferred in FY 1986. Additional instrumentation studies at INEL will not be be initiated.	Reduce research on unique methods for measuring multiphase flow parameters such as velocity, solids content, and viscosity; and for identifying chemical species such as plasma spectrographic techniques. ($1,356)
University Coal Research	Initiated 28 new university projects. ($4,425)	Initiated approximately 30 new university projects relating to coal science, environmental science, surface science, organic and inorganic chemistry of coal constituents and the mechanisms and kinetics of chemical reactions to gasification, liquefaction and combustion. ($5,622)	Initiate approximately 20 new university projects relating to coal science, environmental science, surface science, organic and inorganic chemistry of coal constituents and the mechanisms and kinetics of chemical reactions to gasification, liquefaction and combustion; encourage collaboration between university and industrial researchers. ($4,000)

COAL LIQUEFACTION (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Indirect Liquefaction (continued)	Continued operation of the liquid phase methanol PDU in LaPorte, Texas. ($3,234)	Completed operation of the liquid phase methanol PDU in LaPorte, TX. $4,047,000 of the total funding of $4,874,000 has been deferred in FY 1986. ($4,874)	No activity. ($0)
	Obtained data from bench scale catalyst and slurry phase reaction studies. ($3,945)	Continued to emphasize laboratory catalyst research, provide data base and support limited industrial research on advanced process concepts. ($4,451)	Continue catalyst research, study reaction mechanisms and more promising process concepts at PETC and with industry. ($2,539)
Direct Liquefaction	Continued laboratory scale investigations of advanced process concepts and limited industrial bench scale process research. ($7,316)	Continued laboratory scale investigation of advanced process concepts and limited industrial bench scale research. $952,000 of the total funding of 6,594,000 has been deferred in FY 1986. The continuation of the generic liquefaction research conducted by the Consortium will not be initiated. ($6,594)	Continue in-house research of advanced process concepts at PETC while completing existing bench scale industrial projects. ($2,996)
	Continued operation of coal liquefaction research facility in Wilsonville, Alabama. ($5,400)	Completed operation of the coal liquefaction research facility at Wilsonville, Alabama. $1,330,000 of the total $6,213,000 has been deferred in FY 1986. ($6,213)	No activity. ($0)
Support Studies/Engineering Evaluations	Continued biomedical studies with emphasis on staged liquefaction products and chemical upgrading of products. ($1,180)	Completed biomedical studies with emphasis on products from coprocessing coal and residual petroleum. ($950)	No activity. ($0)

COMBUSTION SYSTEMS (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Pressurized Fluidized Bed Combustion (cont'd)	Completed fluidization research on particulate flux/heat transfer, low rank coals and fluidization regimes at various pressures. ($400)	No activity. ($0)	No activity. ($0)
Advanced Combustion Technology	Completed combustion and system studies of partially developed combustor concepts. ($1,567)	Completed efforts associated with the AVCO advanced slagging combustor project, including test on the bench scale combustor. ($765)	No activity. ($0)
	Continued TRW advanced slagging combustor project. ($1,389 of prior year funds) ($0)	Completed TRW advanced slagging combustor project. ($854 of prior year funds) ($0)	No activity. ($0)
	Initiated pulsed combustor project. ($0)	Completed AVCO pulsed combustor project. ($433)	No activity. ($0)
	Planned to initiate an RFP for light industrial concept combustors. ($0)	Redirected RFP activity to a combined PRDA for light industrial, commercial, and residential concepts. Awarded contracts and initiated Phase I efforts consisting of economic and environmental assessments. $951,000 of the total $1,655,000 has been deferred in FY 1986. ($1,655)	Continue development of the most promising of the concepts selected including design, fabrication and testing. ($1,400)

DEPARTMENT OF ENERGY
FY 1987 CONGRESSIONAL BUDGET REQUEST
FOSSIL ENERGY RESEARCH AND DEVELOPMENT
FUEL CELLS
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
hosphoric cid Systems	Continued technology development of on-site systems; completed testing of second 30-cell water-cooled short stack and testing of 200 kW developmental reformer. ($5,787)	~~Continued technology development of water-cooled on-site systems; performed verification tests of prototype stack and plant subsystems. ($5,591) $2,735,000 of the $5,591,000 for the 40 kW on-site program has been deferred in FY 1986.~~	No further development work will be supported on this activity. However, close coordination will be maintained with the industrial sector, GRI, and EPRI. ($0)
	Completed testing of first 25 kW full size on-site stack with dielectric liquid coolant. ($1,967)	~~Began testing of 25 kW on-site system including fuel cell stack, fuel processor and inverter. ($2,190) The entire $2,190,000 for this testing has been deferred in FY 1986.~~	
	Continued electric utility R&D with water-cooled stacks (completed testing of second and third 10 square feet short stacks; completed 1000 hour test of full height stack). ($7,754)	~~Continued inverter and stack technology work on the 11 MW water-cooled electric utility technology through development of stack configuration "B". ($1,903) The entire $1,903,000 has been deferred in FY 1986.~~	

FUEL CELLS (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Phosphoric Acid Systems (cont'd)	Continued electric utility R&D with air-cooled stacks (completed testing of 10 kW stack and fabrication of 100 kW engineering model stack). ($11,688)	Continued electric utility R&D with air-cooled stacks for a 7.5 MW system (begin tests of 25 kW stacks and 100 kW engineering model stack). ($10,471) $9,271,000 of the $10,471,00 (previously deferred) has been proposed for rescission.	
	Conducted analytical evaluations of candidate system configurations including coal using systems. ($1,377)	Continued a small activity for analytical evaluations in support of the above development efforts. ($200)	
Molten Carbonate Systems	Completed verification of technology in subscale stack tests and designed first large area short stack; continued a small technology base effort to support this development effort ($4,200). Completed verification of direct fuel reforming concept and continued a small technology base effort to support the direct-fueled concept; began development of direct-fueled cell stacks ($2,940).	Completed verification testing of first external reforming, large area short stack ($991). Completed development of direct fueled concept in small cells. Initiated PRDA to continue development of external and/or internal reforming molten carbonate stacks. ($6,840) Of the $6,840,000, $3,329,000 for ERC's direct fuel cell research has been deferred in FY 1986.	Continue development of external and/or internal reforming molten carbonate stacks. ($2,600)
	No activity. ($0)	Initiated development of a contaminant resistant molten carbonate cell. ($476) The entire $476,000 for this research has been deferred in FY 1986.	Complete development of a contaminant resistant cell. ($100 of FY 1986 funds)

FUEL CELLS (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Molten Carbonate Systems (cont'd)	Continued technology base research on contaminants, life cycles, corrosion of components, and system analysis. ($1,504)	Continued system studies and research on contaminants, cell corrosion, cell mechanical deformation and electrolyte composition. ($1,147)	Continue technology base research on cell components and corrosion resistant materials. ($800)
	Initiated a study at ANL on promising new materials for use as cell cathodes and continued supporting research. ($207)	Continued a study at ANL on promising new materials for use as cell cathodes and supporting research. ($478)	No activity. ($0)
Advanced Concepts	Continued R&D effort on solid oxide technology operating on coal gas; initiated fabrication of 5 kW module. ($2,640)	Continued development of a tubular solid oxide fuel cell concept with fabrication and initial testing of a 5 kW module and initial design of a 25 to 200 kW generator. ($3,251) $952,000 of the total $3,251,000 has been deferred in FY 1986.	Complete testing of a 5 kW module and continue development of 25 to 200 kW generator. ($1,600)
	Continued selected technology base efforts including critical materials and alternative designs. ($408)	Continued system studies and research on solid oxide fuel cell materials, cell fabrication techniques and new concept evaluations. ($519)	Complete system studies and research on solid oxide fuel cell materials, cell fabrication techniques and new concept evaluations. ($75 of FY 1986 funds)

DEPARTMENT OF ENERGY
FY 1987 CONGRESSIONAL BUDGET REQUEST
FOSSIL ENERGY RESEARCH AND DEVELOPMENT
HEAT ENGINES
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Gas Turbines	Established preliminary design and operating requirements for gas turbine systems burning coal derived gas and fine particulate fuel forms; completed PRDA activities in connection with major system components development. ($7,602)	Initiated limited research activities of FY 1985 PRDA aimed towards that portion of the integrated systems test validation which can be completed in FY 1987. ($8,432) $1,428,000 of the total $8,432,000 has been deferred in FY 1986.	Complete first portion of the integrated systems test program. ($5,994)
	Continued evaluation of advanced gas turbine combustor design concepts. ($300)	Continued essential engineering test stand evaluation of gas turbine combustor design dry coal fuels in support of major component development contracts ($1,297)	Continue evaluation of CLM in gas turbine combustor test stand. ($400)
	Completed initial analyses of economic and performance factors relating to gas turbine applications. ($100)	No activity. ($0)	No activity. ($0)
	Initiated a study for development of an integrated coal-fired power train for locomotive applications. ($492)	Completed report requested by Congress on feasibility of coal-fired locomotive. ($0)	No activity. ($0)

MAGNETOHYDRODYNAMICS (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Magnetohydrodynamics	Developed coal-fired combustors for use in POC testing at the CDIF. Work was performed by TRW Corp., Redondo Beach, CA. ($3,905)	Designed and constructed prototypical 50 MW thermal coal-fired combustor. Work was performed by TRW. ($2,706)	Terminate. ($0)
	Operated CFFF to obtain proof-of-concept data. Work was performed by the University of Tennessee Space Institute, Tullahoma, Tenn. ($7,060)	Continued operation of CFFF. Work was performed by the Univ. of Tenn. ($6,199)	Terminate. ($0)
	Obtained engineering data base for the design, construction, and operation of MHD power trains. Work was performed by Westinghouse Electric Corp., Pittsburgh, Pa. ($489)	Continued development of engineering data base for MHD power trains. Work performed by Westinghouse Electric. ($217)	Terminate. ($0)
	No Activity. ($0)	$13,130,000 of the $27,717,000 has been deferred in FY 1986.	No Activity. ($0)

SURFACE COAL GASIFICATION (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Advanced Process Development (cont'd)	No activity. ($0)	Issue a PRDA to universities to examine gasifier operating conditions in context of characteristics of selected high volatile coals known to produce higher yields of liquids to establish optimum product yields. ($480)	No activity. ($0)
	Continued theoretical studies of coal gasifiers and gasification systems to generate data needed for design of optimized systems/ technology data base. ($993)	Continued theoretical studies on coal gasifiers and gasification systems needed for design of an optimized systems/technology data base. ($445)	Continued theoretical studies on coal gasifiers and gasification systems needed for design of optimized systems. ($703)
	Continued studies to determine the effect of gasifier bed composition on gas components that are produced. ($443)	Completed studies on the interrelationship between gasifier bed composition and operational parameters on the composition of products produced. ($292)	No activity. ($0)
	No activity. ($0)	Begin studies on the use of advanced gasifier concepts, mild gasification techniques, pretreatment processes, new catalysts, processing chemistries, and their potential applications in the economic production, upgrading, and use of new fuel forms. The entire $1,904,000 has been deferred in FY 1986. The Mild Gasification technology development studies will not be initiated. ($1,904)	Redirect and continue essential studies leading to economic production, upgrading and use of new fuel forms. ($250)
Systems Engineering Concepts	Performed slip stream testing program at existing facilities to study performance of instruments, operating components and materials of construction. ($990)	Completed slip stream testing. ($255)	No activity. ($0)

SURFACE COAL GASIFICATION (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Systems Engineering Concepts (cont'd)	Initiated studies on innovative techniques for essential in-line measuring instruments to determine process parameters/gas compositions essential to process control and evaluation. ($207)	Completed studies on innovative techniques for essential in-line measuring instruments to determine process parameters/gas compositions essential to process control and evaluation. ($438)	No activity. ($0)
	Initiated a high pressure study at bench scale to the study suitability of composite sorbents for cleanup of gas streams. ($1,229)	Completed the high pressure bench scale study to determine suitability of composite sorbents for cleanup of gas streams. ($200)	Utilize results of studies on composite sorbents, mixed metal oxides, catalysts, etc. to establish reaction mechanisms by which gasifier performance can be controlled through use of in-bed/coal-feed additives. ($200)
	Performed studies of the KILnGAS coal gasification system to determine key operational parameters. ($7,375)	Continued studies of KILnGAS coal gasification system to determine key operational parameters. ($14,336)	Complete studies of KILnGAS coal gasification system with $6,000 of prior year funding. ($0)
	Continued PDU work at the Waltz Mill facility on the study, development and evaluation of integrated gasification/hot gas cleanup/fuel use systems for utility applications. In addition, $3M of deferred funding was also utilized. ($6,392)	Completed PDU work at the Waltz Mill PDU on the study, development and evaluation of integrated gasification/hot gas cleanup/fuel use systems for utility applications. $3,801,000 of the $8,602,000 has been proposed for rescission in FY 1986.	No activity. ($0)
	Completed a cooperative research program on optimization of fixed-bed gasifiers for industrial use applications (the MIFGA effort). ($738)	No activity. ($0)	No activity. ($0)

SURFACE COAL GASIFICATION (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Systems Engineering Concepts (cont'd)	Funds appropriated to complete studies on the U-Gas ash agglomerating process when operating at high temperatures and pressures were approved for deferral by Congress. ($1,475)	Funds deferred in FY 1985 were used to offset FY 1986 appropriations requirements. ($0)	No activity. ($0)
	No activity. ($0)	Reactivate fixed-bed gasifier at METC to generate flue gas to evaluate and develop advanced hot gas cleanup systems. $475,000 of the $874,000 has been deferred in FY 1986. The expanded hot gas cleanup at the METC gasifier will not be initiated. ($874)	Continue key studies on integration of gasifiers/gasification technologies with other conversion systems to determine the most optimum configurations and on identification of problems requiring R&D effort to resolve. ($173)
	No activity. ($0)	Completed key studies on the integrated operation of gasifier hot gas (particulate removal and sulfur removal) systems and gas turbines to identify and solve R&D integration problems. The entire $1,428,000 has been deferred in FY 1986. Efforts at the Schenectady gasifier will not be initiated. ($1,428)	Continue the PDU effort exploring issues limiting the integration and development of gasifier/advanced hot gas cleanup systems/turbines for the production of power using prior year funding. ($0)
	Continued to provide engineering analyses and systems evaluation capability for joint DOE/GRI Coal Gasification Program utilizing FY 1984 funding. ($0)	Continued to provide engineering analyses and systems evaluation capability for joint DOE/GRI Coal Gasification Program utilizing FY 1984 funding. ($0)	Continue to provide engineering analyses and systems evaluation capability for joint DOE/GRI Coal Gasification Program through monitoring processes, review of technical data and economic assessments. ($600)
Environmental and Engineering Analyses	Performed slip stream studies at existing facilities on promising systems for effluent cleanup and control. ($846)	Completed slip stream studies on promising systems for effluent cleanup and control. ($192)	No activity. ($0)

DEPARTMENT OF ENERGY
FY 1987 CONGRESSIONAL BUDGET REQUEST
FOSSIL ENERGY RESEARCH AND DEVELOPMENT
OIL SHALE
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Oil Shale Technology Base	Expanded eastern shale research in novel concepts and specific areas such as data base, utilization of fines, hydroretorting beneficiation, and studying retorting parameters and product characteristics. ($2,951)	Continued FY 1985 efforts on eastern shales. Includes eastern and western shale retorting parameters, and product characteristics related to beneficiation and hydroretorting. The $1,903,000 for expanded Eastern Oil Shale technology base efforts has been deferred in FY 1986. ($1,903)	Complete specific eastern shale research resulting from FY 1985 unsolicited proposals in the areas of hydroretorting and in situ processing. ($1,450)
	Developed a systems analyses capability to enable assessment from mining to spent shale disposal. ($748)	Continued developing a systems analyses capability to enable assessment from mining to spent shale disposal. ($399)	Continue developing a systems analysis capability to enable assessment from mining to spent shale disposal. ($277)
	Obtained reference eastern and western oil shales, began characterization studies of these shales, and initiated experiments with reference retort systems to provide data for modifying and developing chemical, physical, and economic models of generic, moving-bed processes. Supported novel concepts research on eastern and western shales. ($2,594)	Continued characterization studies of reference shales obtained in FY 1985. Continued experiments with reference retort systems to provide data for modifying and developing chemical, physical, and economic models of generic, moving-bed processes. ($2,214)	Continue experiments with reference shales in various generic solids recycle retort systems to provide data for modifying and developing chemical, physical, and economic models. Maintain reference shale bank activities including characterization and distribution of shales to program participants. ($1,201)
	Initiated development and maintenance of an oil shale data base. ($324)	Continued development and maintenance of an oil shale data base. ($144)	Continue development and maintenance of an oil shale data base. ($150)

OIL SHALE (cont'd)
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Oil Shale Technology Base (cont'd)	Continued experiments to evaluate, modify, and/or develop predictive models for oil shale fragmentation and in situ (low-void) retorting. ($2,111)	Completed experiments to evaluate, modify, and/or develop predictive models for oil shale fragmentation and in situ (low-void) retorting. ($2,834)	No activity. ($0)
	No activity. ($0)	The $953,000 study of research needs/activities for establishing extraction research project through Idaho Operations Office has been deferred in FY 1986. ($953)	No activity. ($0)
Environmental Mitigation	Initiated development of siting methodology. ($874)	Completed studies of siting methodology. ($376)	No activity. ($0)
	Initiated development of the environmental data base. ($246)	Continued development of the environmental data base. ($144)	Continue development of the environmental data base. ($50)
	Conducted research on nitrogen emissions and the capture of sulfur by oil shale compounds under varying process conditions. ($547)	Completed research on nitrogen emissions and the capture of sulfur by oil shale compounds under varying process conditions. ($192)	No activity. ($0)

DEPARTMENT OF ENERGY
FY 1987 CONGRESSIONAL BUDGET REQUEST
FOSSIL ENERGY RESEARCH AND DEVELOPMENT
PLANTS AND CAPITAL EQUIPMENT
KEY ACTIVITY SUMMARY

Key Activity	Actual Activities During FY 1985	Estimated Activities During FY 1986	Planned Activities During FY 1987
Capital Equipment	Provided necessary capital equipment for ETC's and National Laboratories. ($1,925)	Provided for centralized funding for capital equipment needs in all FE R&D activities conducted at the ETC's, National Laboratories, and BPO. ($2,865)	No activity. ($0)
	Acquired mainframe computer at METC. ($2,500)	Acquired mainframe computer at METC. ($2,500 of FY 1985 funds)	No activity. ($0)
Construction	Provided for general plant projects at ETC's. ($2,458)	Provided for general plant projects at ETC's. ($2,856)	No activity. ($0)
	Completed the waste water treatment facility at METC. ($2,458)	No activity. ($0)	No activity. ($0)
	No activity. ($0)	Provided funding for planning and design of METC administration wing. The entire $476,000 has been deferred in FY 1986. Construction of the METC admin. wing will not be initiated. ($476)	No activity. ($0)

Question: Is there any place in the budget justification where you even indicate that you are deferring FY 1986 program funds, and what that impact will be?

Answer: The FY 1987 budget justifications were written to be consistent with the numbers in the lead tables. These tables are not net of the deferrals, so the narrative does not acknowledge them. This is a convention followed throughout the Department, which is currently being reconsidered.

Unauthorized Reprogramming of Funds

Question: In reviewing last year's testimony, last year's key activity summaries, briefing charts for this year, and this year's key activity summaries the Committee has uncovered at least five instances of unauthorized reprogrammings in the Control Technology and Coal Preparation budget activity.

Lets review the reprogrammings.

Chemically modified coals

The key activity summary for the FY 1987 budget shows a PRDA for $2,286,000 being issued in FY 1986 for chemically modified coals. Where does that appear in the FY 1986 key activity charts or in the FY 1986 budget justification?

Answer: The specific procurement action, in this case a Program Research and Development Announcement (PRDA), is not mentioned in the FY 1986 budget request. However, work in the area of "chemically modified coals" was a part of the coal preparation program in the chemical coal cleaning subactivity included in the FY 1985 and FY 1986 budget justifications. Ames National Laboratory, Southern Illinois University (SIU), and United Coal Company were funded in FY 1985 to do research in this area and the research at Ames and SIU is continuing in FY 1986. Historically, coal cleaning technologies have been applied to run-of-mine coal, or more specifically, to coal that had been only physically modified (grinding, screening, etc.) prior to cleaning (removal of ash and sulfur). The objective of the chemically modified coal research is to extend the use of physical, chemical and microbiological coal cleaning methods to chars from processes such as gasification and liquefaction. For example, the Ames research is looking at chemicals that could be added during the grinding of coal which might alter the surface chemistry so that subsequent physical cleaning would be much more effective. SIU is investigating the application of quarternary salts to chemically modify the coal so that ash and pyrite may be selectively liberated. The United Coal effort looked at cleaning coal char which could then be mixed back with the pyrolysis liquids and water in a slurry.

Question: Why was it decided to issue this procurement document?

Answer: The concept described above is seen as having significant potential for producing a coal based fuel with significantly reduced ash and sulfur content and in a form which would allow it to be used in both new and retrofit applications. Research in this area is directly in support of the objectives of the coal preparation program. The PRDA is planned in order to invite industry to propose research for this activity. Sufficient research has been done to indicate technological promise. The next logical step is for industry to become involved so as to posture the technology for marketplace penetration.

Question: How can you start a new program, not included in the budget, without informing the Congress, either through a supplemental request or a reprogramming?

Answer: The FY 1986 research in this area is not the start of a new program, but rather a natural evolution in the coal preparation program and supports its program objectives. Because of the potential of the chemically modified coal concept, we chose to solicit further proposals for research in this area by way of a PRDA in 1986.

Question: From where do you intend to get the required funds?

Answer: The final negotiated cost to DOE in FY 1986 for the EPRI/DOE advanced physical coal cleaning development project and for the microbial desulfurization project were less than anticipated thus allowing us to pursue the chemically modified coal concept. This is an alternate approach seen as having significant potential for meeting the coal preparation objectives and is consistent with the budget justification.

Question: What is the technical justification for this program?

Answer: The overall objective of the coal preparation program is to develop technologies for the removal of ash and sulfur. The ash and sulfur in coal is both physically and chemically bound to the coal, thus making the removal difficult. Recent research suggests that the coal could be chemically modified such that these physical and/or chemical bonds are weakened, allowing for significantly improved performance in subsequent cleaning steps. Quarternary salts, chemical additives, etc. are considered as candidate treatments to assist in the liberation of the sulfur and ash from coals.

DOE/EPRI advanced coal cleaning

Question: The FY 1987 key activity document shows the DOE/EPRI program in FY 1986 at a level of $538,000. Last year's key activity shows a level of $3,594,000. Your testimony in Part 7 of our hearings for FY 1986, on page 936, shows the same number. Where did the remainder of the funds go?

Answer: The FY 1986 budget request and the budget testimony were given prior to selection and negotiation of the contracts which are a part of the joint DOE/EPRI project. The funding which was not required for the negotiated contracts is to be used to support research in other technical areas in support of the coal preparation objectives. Primarily, the additional funding is to be made available for the chemically modified coal efforts.

Question: When did you submit documentation to the Congress to justify the transfer of funds?

Answer: We did not submit documentation to Congress. The key activity summary which is referenced is provided to the Committee as our best estimate of specific activities to be undertaken. The summary is prepared at a level well below the major mission area (e.g., Coal Preparation, Flue Gas Cleanup). Because of the nature of research and development activities, changes at this level of detail are almost inevitable. If these changes affect overall mission accomplishment, change program objectives as stated in the budget justifications, modify Congressional direction provided in Committee reports or affect Congressionally-sensitive activities, we would, of course, prepare a reprogramming proposal prior to making the change. However, we hope the Committee would concur that other adjustments between key activities could be made without initiating a reprogramming proposal. The Department recognizes the Committee's concern in this regard and would like to work with the Committee to ensure that it receives the information it needs in a timely manner.

Question: What is the technical justification?

Answer: The technical justification for the reduced funding for the DOE/EPRI project is that, in the judgment of the evaluation team and the selection official (with the advice of EPRI), the two processes selected for fabrication and test best met the project selection criteria. After selection and negotiation, the cost to DOE was much less than anticipated when the FY 1986 budget was formulated. Therefore, funds were available to pursue other concepts in support of the coal preparation objectives.

Question: If you don't need the funds in FY 1986, why are you requesting $1,000,000 to continue the program in 1987?

Answer: The joint DOE/EPRI project is considered high priority because of the potential impact it may have in the reduction of emissions from coal fired powerplants. The two contracts resulting from the first solicitation are fully funded but we would continue the project in FY 1987 by selecting new additional advanced physical cleaning concepts for fabrication and testing. The FY 1987 funding will not be required until late in FY 1987 and there are other high priority research needs in the coal preparation program in FY 1986. Therefore, funding is being requested for FY 1987, rather than defer the expenditure of the FY 1986 funds.

Flue Gas Cleanup - Acid Rain Precursors

Question: Key activities for the FY 1987 budget show $1,797,000 for the PRDA and proof-of-concept test for acid rain percursor technology in FY 1986. The same charts for last year, as well as page 934 in Part 7 of our hearings on the FY 1986 budget show $5.3 million. Where did the funds go?

Answer: The FY 1986 budget request and the budget testimony were given prior to selection and negotiation of the contracts which were awarded under the PRDA late in FY 1985. The decrease in funding requirements resulted from receiving less hardware intensive proposals with lower costs, and fewer proposals were funded than originally anticipated. In addition, substantial funding was obligated to these projects in FY 1985; this is explained more fully in subsequent answers. The excess funds were utilized on other acid rain related technologies in the Flue Gas Cleanup program. Specifically, the additional funding was made available to increase the funding level for the fluidized bed copper oxide process and for advanced concepts to continue development of several promising technologies such as the NOXSO process, the moving bed copper oxide process, and electrodialysis.

Question: When did you ask Congress to approve the transfer of funds to other programs?

Answer: We did not ask Congress to approve a transfer of funds. The key activity summary which is referenced is provided to the Committee as our best estimate of specific activities to be undertaken. The summary is prepared at a level well below the major mission area (e.g., Coal Preparation, Flue Gas Cleanup). Because of the nature of research and development activities, changes at this level of detail are almost inevitable. If these changes affect overall mission accomplishment, change program objectives as stated in the budget justifications, modify Congressional direction provided in Committee reports or affect Congressionally-sensitive activities, we would, of course, prepare a reprogramming proposal prior to making the change. However, we hope the Committee would concur that other adjustments between key activities could be made without initiating a reprogramming proposal. The Department recognizes the Committee's concern in this regard and would like to work with the Committee to ensure that it receives the information it needs in a timely manner.

Question: What is the technical justification?

Answer: As stated above, the reduced funding requirements for the acid rain precursor technology provided the opportunity to pursue other high priority concepts in support of the flue gas cleanup program objectives. These technologies have the potential to remove both NO_x and SO_x simultaneously, which would be more cost effective than current technology.

Question: If the funds were not needed in FY 1986, why are you requesting $3.4 million for this work in FY 1987?

Answer: After awarding the acid rain precursor control contracts, it was determined that the planned FY 1986 acid rain precursor funding was in excess of FY 1986 funding requirements. Therefore, the excess funding was used to fund other FY 1986 acid rain related flue gas cleanup projects, including the fluidized bed copper oxide project and other promising advanced concepts areas which required additional FY 1986 funding.

The $3.4 million request in FY 1987 represents our best estimate of the funding needs required to complete the contracts awarded in response to the PRDA issued in FY 1985.

Question: Congress specifically reduced this item in FY 1985 to $3,000,000, and yet your FY 1987 key activity summary shows spending in FY 1985 of $4,667,000. On what basis did you increase funding for this program specifically reduced by Congress?

Answer: At the end of FY 1985, there was uncertainty as to whether or not a contract could be successfully negotiated on the copper oxide scaleup. It was therefore decided to limit the initial obligation to $900,000, which covered Phase I work only. This award was not completed until late September. It was then determined that the additional funds could be most beneficially utilized by forward funding the three projects on acid rain control technology, with the understanding that if Phase I of the copper oxide project proceeded successfully, then additional funds could be directed to continue subsequent phases.

Since the award of the copper oxide contract was done late in the fiscal year, and the success of Phase I for copper oxide was in doubt, the Department exercised its best judgment on how to utilize these funds in a prudent and responsible manner. The change in allocation of funds occured within the Flue Gas Cleanup program and was consistent with the program objectives stated in the budget justification. The fact that the FY 1985 conference report specifically reduced the funds available for this activity was unintentionally overlooked.

Question: When did you request such an increase?

Answer: No request was made because of the unintentional oversight of the limitation in the conference report. We acknowledge now that we should have submitted a reprogramming letter to the Committee last year once we decided on the best use of these funds.

Question: From what programs were the funds provided?

Answer: The funds for this increase were taken from the fluidized bed copper oxide project as described above.

Question: What is the technical justification?

Answer: One of the goals of the Control Technology and Coal Preparation program is to develop a capability to reduce the emissions of suspected acid rain precursors from existing, uncontrolled coal-fired boilers that is significantly lower in cost than commercially available methods. One approach in attaining this goal is the development of a low cost technology of relatively modest performance that is capable of being retrofitted to existing boilers which would greatly enhance the capability for attaining SO_2 reductions. The reduced funding requirements in FY 1985 for the copper oxide project provided the opportunity to forward fund the projects on acid rain control technology in support of the Flue Gas Cleanup program objectives.

Flue Gas Cleanup - NO_x/SO_x Research

Question: FY 1987 key activities show $4,456,000 for advanced NO_x/SO_x research in FY 1986, instead of $1,772,000 as shown in the FY 1986 key activity charts. What is the source of the additional funds?

Answer: Two other NO_x/SO_x activities in the FY 1986 summaries are part of this work as displayed in the FY 1987 key activities: "Continue cost/performance analysis" (of advanced NO_x/SO_x flue gas cleanup systems) and "Continue research on chemistry, thermodynamics, and fine particulate control" (for NO_x/SO_x processes). In addition, funds were available within the Flue Gas Cleanup program from the acid rain precursor technology area, where not all of the funds available were needed in FY 1986.

Question: When did you request the transfer of funds?

Answer: No transfer of funds was requested. The key activity summary which is referenced is provided to the Committee as our best estimate of specific activities to be undertaken. The summary is prepared at a level well below the major mission area (e.g., Coal Preparation, Flue Gas Cleanup). Because of the nature of research and development activities, changes at this level of detail are almost inevitable. If these changes affect overall mission accomplishment, change program objectives as stated in the budget justifications, modify Congressional direction provided in Committee reports or affect Congressionally-sensitive activities, we would, of course, prepare a reprogramming proposal prior to making the change. However, we hope the Committee would concur that other adjustments between key activities could be made without initiating a reprogramming proposal. The Department recognizes the Committee's concern in this regard and would like to work with the Committee to ensure that it receives the information it needs in a timely manner.

Question: What is the technical justification for the increase?

Answer: The primary emphasis of the flue gas cleanup program has been placed on approaches to attain high levels of SO_x and NO control in a more cost effective manner, namely through the development of processes with the potential to remove both pollutants simultaneously in a one process step. The increased funding will allow for continuation of several promising advanced concepts including the "NOXSO" process, moving bed copper oxide process and the application of advanced separation technologies such as electrodialysis to flue gas cleanup.

Flue Gas Cleanup - Copper Oxide Process

Question: FY 1987 key activities show $2,778,000 for copper oxide test and evaluation in FY 1986, while the FY 1986 key activities show $922,000. What is the source of the additional funds?

Answer: These funds came from the acid rain control technology project.

Question: When did you request the additional funds?

Answer: No request was made since the funds were available from the acid rain control technology project.

Question: This Subcommittee added $1,000,000 for this process in the FY 1986 bill, which was later deleted because the Department specifically stated that "additional appropriations are not warranted."

Now several months later we discover you have taken $1.8 million from FY 1986 funds to finance this project. Why?

Answer: The initial amount obligated in FY 1985 was limited to $900,000 because of the uncertainty late in that fiscal year of successfully negotiating a contract on the copper oxide process scaleup. The reasons for this uncertainty were: (1) in response to the RFP, only one proposal was received; (2) the proposed total cost exceeded the original DOE estimate; (3) the cost sharing percentage proposed was less than requested and indeed was not finalized; and (4) objections were raised to the phased contract proposed by DOE wherein the first phase consisted of operation by the contractor of a DOE life cycle test unit. Consequently, in FY 1986 after contract negotiations were completed, additional funds were required to continue the copper oxide project.

Question: Under what authority?

Answer: The key activity summary which is referenced is provided to the Committee as our best estimate of specific activities to be undertaken. The summary is prepared at a level well below the major mission area (e.g., Coal Preparation, Flue Gas Cleanup). Because of the nature of research and development activities, changes at this level of detail are almost inevitable. If these changes affect overall mission accomplishment, change program objectives as stated in the budget justifications, modify Congressional direction provided in Committee reports or affect Congressionally-sensitive activities, we would, of course, prepare a reprogramming proposal prior to making the change. However, we hope the Committee would concur that other adjustments between key activities could be made without initiating a reprogramming proposal. The Department recognizes the Committee's concern in this regard and would like to work with the Committee to ensure that it receives the information it needs in a timely manner.

Question: When did you inform Congress, or request a reprogramming?

Answer: No reprogramming request was made, for the reasons explained above. In retrospect, we should have informed the Committee of our decision in a more timely manner, rather than do so via the FY 1987 key activity summaries.

Question: In addition, your FY 1987 key activities show only $900,000 in FY 1985 for this project, while the FY 1986 charts show $2,429,000 for it. Where did the additional funds go?

Answer: The additional FY 1985 funds were utilized in the acid rain control technology project.

Question: By what authority?

Answer: As discussed previously, the use of these funds for the acid rain control technology project should have been submitted to the Committee as a reprogramming. This was not done because of an unintentional oversight of the FY 1985 conference report language.

Question: How could you reprogram those funds in FY 1985 and at the same time tell Congress you had $3.1 million from FY 1985 and the FY 1986 budget to cover the program?

Answer: The funding shift did not materially affect the planned combined FY 1985 and FY 1986 budget for this project, which at that time and to this day, still remains in excess of $3 million.

Program Direction

Question: Congress has provided separate Program Direction accounts for the Energy Technology Centers and Headquarters. Are all costs for those activities which are not directly charged to research and development reflected in the Program Direction accounts?

Answer: Yes, all Fossil Energy costs are charged either to the direct R&D budget accounts, the Headquarters and ETC Program Direction accounts, or capital equipment and general plant project accounts.

Question: For FY 1984, FY 1985, FY 1986, and FY 1987 please provide the actual costs at each of the ETC's and Headquarters and how, and in what amount, they are allocated to program direction accounts or direct research programs.

Answer: The following chart shows actual funding for FY 1984 and FY 1985. Estimated funding is provided for FY 1986 and FY 1987 at the ETC's and Headquarters and is allocated by fiscal year to the program direction or direct research accounts.

SUMMARY OF FOSSIL ENERGY
DIRECT AND INDIRECT COSTS
(DOLLARS IN THOUSANDS)

	HQ			METC			PETC			BFO		
	R&D	PD	TOTAL	R&D	PD	TOTAL	R&D	PD	TOTAL	R&D	PD	TOTAL
FY 1984	0	8366	8366	10378	21270	31648	12078	18685	30763	3122	1487	4609
FY 1985	0	8578	8578	10424	18031	28455	13296	16573	29869	11174	1857	13031
FY 1986	0	13380	13380	10446	20214	30660	12319	16869	29188	0	1671	1671
FY 1987	0	11260	11260	11522	15807	27329	11992	12933	24925	0	0	0

Great Plains Coal Gasification Plant

Question: How much has the Great Plains Coal Gasification Plant cost the Federal Government to date?

Answer: The Federal Government's cost to date has been $1.5 billion.

Question: Is it costing the government anything to run the plant now?

Answer: No, at this time, the government is not contributing anything to run the plant.

Question: How much remains in the Default Reserve set up by this Committee in 1981?

Answer: $272 million. Of this amount, $222 million will be utilized to repay a portion of the amount borrowed plus the interest that will accrue on the Treasury promissary note utilized to repay the Federal Financing Bank Guaranteed Loan. The approximately $50 million remaining in the Default Reserve is to be retained by the Department for project contingencies.

Question: You are requesting a supplemental appropriation in FY 1986 of over $1 billion.

The supplemental will repay the Treasury for the loan you took to repay the Federal Financing Bank. Is that correct?

Answer: Yes, the supplement will provide the means to repay the Treasury.

Question: As we understand it, this appropriation would not result in the outlay of additional Federal funds. Is that correct?

Answer: Yes, that is correct.

Question: Therefore, it will have no effect on the Federal deficit. Is that correct?

Answer: Yes, that is correct.

Acid Rain

Question: What is the Department's involvement in the review and debate on the report of January 1986 by Drew Lewis on acid rain?

Answer: The Department is a participant in the interagency review of the Drew Lewis report.

Question: How does the Congressional initiative on "clean coal technology" tie-in to the recommendation for a $5 billion, 50-50 cost-shared, demonstration program for control technology?

Answer: The Clean Coal Technologies Program (CCTP) now being initiated at DOE has much in common with the innovative technology demonstration program recommended by the envoys. Both programs share a common objective: to demonstrate the technical and economic feasibility of emerging clean coal technologies.

With the President's March 19, 1986, endorsement of the Special Envoys' recommendations, the current Clean Coal Technology Program will provide an appropriate vehicle for implementing the President's initiative. The broader approach incorporated in the current program solicitation will give us the opportunity to evaluate a wide range of technological options. This will be a major step in achieving the Special Envoys recommendations.

The $400 million CCTP will, in the Envoys' terms, actually be at a minimum an $800 million program when one includes industry cost-sharing at the minimum required ratio of 50-50. Of course, if the projects selected involve higher industry cost-sharing ratios, the total will be higher. For example, if the industry cost-share were 75% the total program size could be over $1.5 billion.

Although the objectives are similar, the two programs as originally conceived have a slightly different emphasis. The Envoys recommended five criteria for innovative coal technologies:

- Projects that have the potential for the largest emissions reductions, measured as a percentage of emission reduction (measured as a percent of SO_2 or NO_x removed).
- Within the above, achieve reductions at the cheapest cost per ton.
- Technologies applicable to the largest number of existing sources.
- Sources that contribute to transboundary air pollution.
- Facilities currently dependent on use of high sulfur coals.

The Congressionally-directed program, in contrast, is not limited to either specific types of coal (except that they be U.S. coals) or specific market applications. It thus includes the Envoys' concerns within a broader coal-use framework.

Question: Do you think that a larger program than the "clean coal" program is necessary?

Answer: The Administration and Congress have already provided substantial support for clean coal technologies -- a total of almost $2.2 billion has been allocated in the U.S. from fiscal year 1981 through fiscal year 1985 to develop technologies for cleaner use of coal. In this year's budget, $700 million has been earmarked for clean coal research between FY 1986 and FY 1991. In addition, an $800 million joint industry/government program designed to develop and demonstrate clean ways to burn coal will be implemented. However, as stated in the White House press release of March 19, the President has indicated his intention to seek to provide in the future the funding recommended in the Joint Report and to encourage States to undertake similar efforts, as several have already done.

Question: Are there enough worthwhile projects to take up more funding?

Answer: The number of "worthwhile projects" cannot be readily determined with any degree of certainty since the proposals in response to the Clean Coal solicitation have not been received.

The current Clean Coal Technology Program will provide an appropriate vehicle for determining the manner and timing necessary to carry out the President's initiative, as announced on March 19, 1986, to expand the control options available to industry. The broad approach incorporated in the current program -- the solicitation is open to all U.S. coals for all market applications — will give us the opportunity to evaluate a wide range of technological options and to better determine the number of potentially worthwhile projects.

Question: What is the extent of your acid rain-related research in FY 1985, FY 1986 and FY 1987?

Answer: The extent of the acid rain related research for FY 1985, FY 1986 and FY 1987 is as follows:

	FY 1985 Adjusted B/A	FY 1986 Adjusted B/A	FY 1986 Less Deferral	FY 1987 Request B/A
CTCP				
Flue Gas Cleanup	14,511	10,952	10,318	7,541
Gas Stream Cleanup	7,348	7,105	5,486	3,839
Waste Management	1,967	1,177	1,177	324
Coal Preparation	10,965	12,716	10,077	6,443
Subtotal	34,791	31,950	27,058	18,147
AR&TD				
Direct Util.	9,990	11,262	10,555	9,415
Environ. Act.:				
Acid Rain TF	750	700	700	750
Subtotal	10,740	11,962	11,255	10,165
Comb. Systems				
AFB Combustion	3,737	2,238	2,227	1,590
AFB/TVA	15,000	14,334	14,334	N/A
PFB Combustion	2,458	5,061	4,851	3,686
Adv. Comb. Tech.	1,967	3,409	2,454	1,882
Alt. Fuels Util.	6,930	4,071	4,071	2,011
Subtotal	30,092	29,113	27,937	9,169

Heat Engines	11,850	12,314	10,764	7,942
Total Acid Rain	87,473	85,339	77,014	45,423
Clean Coal Tech.	N/A	99,400	99,400	149,100

Question: Why are you reducing the amounts expended in FY 1987?

Answer: If one takes out proposed deferrals, the FY 1986 adjusted appropriation for acid rain related activities is $77.0 million. It would also be appropriate, when looking at activities that might be disrupted due to FY 1987 funding, to take out the $14.3 million for the TVA/AFB, since this commitment will be completed in FY 1986.

Removing the TVA/AFB funding leaves $62.7 million in FY 1986 for acid rain related activities, compared to the request of $45.4 million in FY 1987. However, if one considers that funding for the Clean Coal Technology Program increases by about $50 million going from FY 1986 to FY 1987, then the total acid rain related spending is well up in FY 1987.

Clean Coal Technology

Question: What is the effect of the modification to repayment provisions that DOE issued on February 24 concerning the clean coal procurement?

Answer: The amendment to the Clean Coal Technology Program Opportunity Notice (CCT PON) that was issued on February 24 does not require revenue sharing or recoupment by the Government until the project moves beyond the initial operating phase and begins to earn profits.

Question: Is it correct that revenues during the execution of the project, and retained by the private partners, will, in effect, reduce the percentage of their cost sharing?

Answer: Revenues that might be received by the non-DOE participant during the execution of the project would be retained by the non-DOE participant. If there were such revenues, they would tend to reduce the final cost to the non-DOE participant of the project. Nonetheless, the non-DOE participant will receive no cost-sharing credit for evaluation purposes for any projected revenues that may be received during or after the demonstration.

Question: What is the prospect that much revenue will be generated by these projects?

Answer: Until proposals have been received and evaluated by DOE, any comments regarding the amount of revenue that might be received from the projects would be highly speculative. The prospect for revenues would, in part, depend on the accuracy of the cost projections, success of the project, market conditions and other factors related to the commercialization of the technology.

Question: Is an agency such as TVA eligible to participate in the program? Under what conditions?

Answer: The Tennessee Valley Authority (TVA) would be eligible to participate in the CCT Program, subject to the same terms and conditions as provided in the amended PON for any other offeror. This includes a requirement that other appropriated Federal funds are not cost sharing for the purposes of the PON.

Question: What are the respective roles of the Energy Technology Centers and Headquarters in evaluating the proposals?

Answer: Evaluation of the proposals received in response to the CCT PON is the responsibility of the Source Evaluation Board, which is comprised of 7 voting members, two of which are from the Energy Technology Centers (ETC's). Accordingly, the ETC's are directly involved and actively participating in the entire CCT Program. Upon receipt of proposals (due by April 18, 1986), the Board will need further assistance with the conduct of the evaluation. This assistance may be provided by professional staff from both Headquarters and the ETC's.

Question: How many people do you estimate will be involved in the evaluation and selection of projects?

Answer: Depending upon the number and nature of the proposals received, in excess of 100 personnel could be involved in some aspect of review of the proposals. Nonetheless, the final selection decision will be made by the Source Selection Official.

Question: Please provide the details supporting the estimates of administrative costs contained in the budget for FY 1986 and FY 1987.

Answer: For FY 1986, we expect the largest portion of the administrative costs to be attributed to PON development and proposal evaluation and selection. Our estimates are $250,000 for Headquarters and Field personnel travel, per diem, etc. (for a total of approximately 100 people), and $1,250,000 for NEPA documentation and compliance, and other technical support for an FY 1986 grand total of $1,500,000.

For FY 1987, the estimate for administrative costs is $2,000,000. The FY 1987 funding for program direction will provide for contractual services and in-house support in performing post-award monitoring and technical data base activities. These activities would include attendance at project review meetings and the collection, processing and dissemination of technical data.

In addition, funding is provided to cover travel costs of Energy Technology Centers and Headquarters personnel associated with post-award monitoring activities.

Question: How do you plan to monitor projects after agreements are reached?

Answer: Once Cooperative Agreements are awarded, the ETC's will assume primary responsibility for monitoring the projects, in coordination with Headquarters. The specific degree of monitoring will be stipulated in the terms of the negotiated Cooperative Agreement.

Question: Will the data generated be helpful to your overall research and development program? How?

Answer: The data generated may contribute to Fossil Energy's overall research program. In particular, the data provided on the performance characteristics (technical, economic, environmental, etc.) of the clean coal technologies being demonstrated may assist DOE in defining the direction of some future research efforts.

Question: Can your R&D program be helpful to the selected projects? How?

Answer: The contributions of DOE's ongoing Fossil Energy R&D program to the technologies that may be anticipated to qualify for the CCT funding is already a matter of record. Many of the clean coal technologies that are eligible, by definition, for consideration have evolved or otherwise benefited from the long-term accomplishments of DOE's program, and the technology transfer therefrom to the industrial sector. In addition, we believe that the projects awarded Cooperative Agreements will benefit directly and significantly from the expertise of the DOE technical and professional personnel that will be engaged in project monitoring and oversight.

Coal Preparation

Question: Testimony last year states that microbubble flotation is a promising concept. Why, then, are you deferring funds for further testing?

Answer: We continue to consider microbubble flotation as a promising technology. One of the contracts awarded under the DOE/EPRI project is to test a microbubble flotation device at the proof-of-concept scale at the Homer City test facility. In addition, further university research is anticipated in FY 1986 on microbubble flotation. Accordingly, we believe that the FY 1986 program adequately addresses the research area of microbubble flotation, and in consideration of fiscal constraints, the additional FY 1986 amount appropriated for microbubble was deferred.

Question: Does it have advantages over regular froth flotation techniques?

Answer: Laboratory and bench scale testing indicates improved performance over conventional froth flotation. We anticipate verification of this improved performance as a result of the tests at the EPRI coal cleaning test facility.

Question: When do contracts with Ames Laboratory and Carbondale Coal Technology Laboratory expire?

Answer: A new Southern Illinois University (SIU) cooperative agreement runs from March 1, 1986 to February 28, 1987. Ames Laboratory is a Department of Energy National Laboratory. Funds are transferred to the DOE National Laboratories on an annual basis. However, an FY 1986 deferral was submitted related to these projects and current efforts will be funded only through April 20, 1986.

Question: What are the approximate monthly spending levels?

Answer: The SIU cooperative agreement is being funded at a monthly rate of approximately $125,000. Ames Laboratory is conducting coal preparation research at a spending rate of approximately $95,000 per month.

Question: Why are the costs for the DOE/EPRI coal cleaning program so much lower than originally anticipated?

Answer: When the FY 1986 Congressional budget request was formulated and submitted to Congress on February 4, 1985, our original anticipated funding requirement was $3,500,000 for FY 1985 and $3,594,000 for FY 1986. Multiple awards were also anticipated. Eleven proposals were received. In the judgment of the evaluation team and the selection official (with the advice of EPRI), the two processes selected for fabrication and testing best met the project selection criteria. After selection and negotiation, the cost to DOE was less than anticipated when the FY 1986 budget was formulated.

Question: What kind of proposals did you get?

Answer: Eleven proposals were received. The technologies proposed were:

- Ostisca Heavy Liquid Cyclone
- True-Heavy Liquid Separation
- Eilat Process
- Chemical Fracturing/Froth Flotation
- Hyfloc Process
- Static Tube Flotation
- Licado Process
- Electrostatic Separation
- Microbubble Flotation
- Pryite-Ash Scalping/Froth Flotation
- Microbially Augmented Ash and Pryrite Physical Separation

Question: At what stage are those proposals?

Answer: The two processes selected for testing at the EPRI coal cleaning test facility were microbubble flotation and electrostatic separation as proposed by Bechtel National and Advanced Energy Dynamics, respectively. The static tube flotation and microbially augmented technologies were also proposed to DOE under a separate advanced coal cleaning PRDA and both subsequently have been awarded contracts under that solicitation. Bechtel and Advanced Energy Dynamics are both under contract with the first device testing to begin September 1986 and the installation of the second device to take place in January 1987. Another solicitation is planned such that additional concepts could be tested after these first two. These new concepts to be selected from a future solicitation will have the advantage of about two years of development since the first solicitation competition.

Question: Please provide the details of the procurement for the record, to include who responded for what technologies; what contracts were awarded, and what the schedule for testing of technologies is.

Answer: Eleven proposals were received as a result of the competitive solicitation. The technologies proposed and the proposers are as follows:

- Ostisca Heavy Liquid Cyclone - Science Applications International Corp.
- True-Heavy Liquid Separation - Raymond Kaiser Engineers
- Eilat Process - Coal Gas Inc.
- Chemical Fracturing/Froth Flotation - Scheely Datta and Associates
- Hyfloc Process - Babcock and Wilcox
- Static Tube Flotation - Michigan Technical University
- Licado Process - Beth Energy/University of Pittsburgh
- Electrostatic Separation - Advanced Energy Dynamics
- Microbubble Flotation - Bechtel National
- Pryite-Ash Scalping/Froth Flotation- Atlantic Research Corporation
- Microbially Augmented Ash and Pryrite Physical Separation - Atlantic Research Corporation

The processes selected for testing at the EPRI coal cleaning test facility were microbubble flotation and electrostatic separation as proposed by Bechtel National and Advanced Energy Dynamics, respectively. Bechtel and Advanced Energy Dynamics are both under contract with the first device testing to begin September 1986 and the installation of the second device to take place in January 1987.

Question: Testimony last year indicated that by early FY 1987 the Gravimelt process would be ready for a "proof-of-concept" decision. In the FY 1987 budget, key activities refer to completing a "pre" proof-of-concept design. What is "pre" proof-of-concept?

Answer: The existing 20 lb/hr test unit is comprised of separate subsystems such as reactor, washing, regeneration, etc. Tests are to be conducted under the existing contract to verify the performance of these subsystems. However, the complete system can not be operated continuously in a steady state condition. Therefore, the next stage in the development of the Gravimelt process in the judgement of the contractor and the DOE is to operate at the nominal 20 lb/hr scale in an integrated and continuous mode such that steady state operations can be achieved. This integrated system test is what was called "pre" proof-of-concept in the budget request.

Question: How have plans changed since last year?

Answer: The basic change is that the technology will not be scaled-up beyond the present nominal 20 lb/hr scale until completion of an integrated system test to verify that the technology can meet performance objectives in steady state operation.

Question: What progress has been made on this process?

Answer: The technology continues to verify the ability to meet New Source Performance Standards (NSPS) sulfur removal levels with over 95 percent ash removal. A rotary kiln reactor and the regeneration subsystem are in shakedown.

Question: Why are you now supporting chemically modified coals when you stated last year that you were not looking at any chemical coal cleaning?

Answer: The coal preparation program has included chemical coal cleaning activities for several years. During FY 1986, as stated in the FY 1986 and the FY 1987 budget requests, we are pursuing two chemical processes for "chemically" removing ash and sulfur from coal. They are the Gravimelt and microwave processes; both based on the same chemistry, alkali displacement. We have no plans to pursue any other chemical processes such as these. However, work in the area of "chemically modified coals" was a part of the coal preparation program in the chemical coal cleaning subactivity in FY 1985 and 1986. Ames National Laboratory and Southern Illinois University (SIU), for example, were funded in FY 1985 to do work in this area and the research is continuing in FY 1986. Historically, coal cleaning technologies have been applied to run-of-mine coal or more specifically to coal that had been only physically modified (grinding, screening, etc.) prior to cleaning (removal of ash and sulfur). The objective of the chemically modified coal research is to extend the use of physical, chemical and microbiological coal cleaning methods to chars from processes such as gasification and liquefaction. For example, the Ames research is looking at chemicals that could be added during the grinding of coal which might alter the surface chemistry so that subsequent physical cleaning would be much more effective. SIU is investigating the application of quarternary salts to chemically modify the coal so that ash and pyrite may be selectively liberated. The United Coal effort looked at cleaning coal char which could then be mixed back with the pyrolysis liquids and water in a slurry.

Question: A FY 1986 briefing chart and a FY 1987 briefing chart show considerably different numbers for FY 1986 programs. You obviously have reprogrammed funds as previously discussed. Why the change to chemical coal cleaning?

Answer: As explained in earlier answers, the concept described above is seen as having significant potential for improving the performance of coal cleaning systems. It represents an evolution, not a sudden change, in the program. Research in this area is directly in support of the objectives of the coal preparation program.

Question: What kinds of end uses are you targeting with the new emphasis?

Answer: The cleaned coal resulting from chemically enhanced cleaning is seen to potentially have application in the utility, industrial and residential/commercial sectors, as a retrofit fuel in larger applications, and in new applications such as furnaces and heat engines as well.

Question: Your budget says that the capability to remove sulfur from coals by conventional coal preparation is limited since only some of the inorganic sulfur contained can be removed. If so, why do you emphasize coal preparation technologies in your budget?

Answer: The conventional technology referred to is that which is commercially available today. This technology primarily relies on differences in specific gravity to separate pyritic (inorganic) sulfur and ash from coal. It does not remove the chemically bound (organic) sulfur. We believe that advanced physical and chemical coal cleaning processes can be developed that significantly improve on the performance of these conventional technologies. By far the major impediments to expanded and environmentally acceptable utilization of coal are associated with the presence of sulfur and ash in the coal. Advanced coal preparation technology has the potential for being the most cost effective way of overcoming these barriers. This could allow for displacement of oil with coal in many applications as well as have significant impact in reducing potential acid raid precursors from coal fired powerplants. That is why we emphasize coal preparation technologies in our budget.

Flue Gas Cleanup

Question: What projects are underway in your acid rain precursor technology program?

Answer: Three projects are underway. Dravo Corporation was awarded a contract for a process involving the pneumatic injection of dry hydrated lime into a humidified duct upstream of the particulate control system. The other two projects involve the injection of lime slurry into the duct. Bechtel is developing a process using a dual fluid nozzle to inject a pressure hydrated dolomitic lime slurry. General Electric will use a rotary atomizer to inject a conventional lime slurry. This latter project also contains an optional task on electrostatic augmentation to improve slurry atomization and dispersion.

Question: To what stage will the technologies be tested?

Answer: These technologies will be tested at the proof-of-concept scale (5-12 MWe).

Question: When will the program be complete?

Answer: This program is scheduled to be completed in December, 1987.

Question: What projects are underway in the NO_x/SO_x program?

Answer: The following projects are underway:

- o Fluid bed copper oxide
- o E-beam/ammonia injection
- o ANL spray dryer
- o The "NOXSO" process
- o Moving bed copper oxide process

In addition, a number of advanced concepts are being pursued at the laboratory/bench scale. These include microwave enhancement, electrochemical based processes, and chelation chemistry.

Question: To what stage will they be tested?

Answer: The size to which they will be tested is as follows:

- o 10000 Standard Cubic Feet per Minute (SCFM) - Fluid bed copper oxide
- o 15000 SCFM - E-beam/ammonia injection
- o 22 MWe - ANL spray dryer
- o 1300 SCFM - the "NOXSO" process
- o 1300 SCFM - Moving bed copper oxide process

In addition, the advanced concepts mentioned in the previous question are being pursued at the laboratory/bench scale.

Question: What is the status of the copper oxide project?

Answer: As a result of a Request for Proposal (RFP) an award was made to UOP, Inc., Des Plaines, Illinois. The first phase of the project will consist of sorbent life cycle testing where the sorbent is exposed to repeated cycles of sulfation and regeneration such as would be encountered in a full scale application. A small scale test unit fabricated and tested in-house was shipped to the host utility site and installed in March 1986. The host site is Commonwealth Edison's Kincaid Station in Illinois. The test unit will be operated using a slipstream from a boiler firing a 3.4 percent sulfur coal. If the results of the life cycle tests are sufficiently promising and the State of Illinois supplies the $1 million in cost sharing, as promised, the contractor will be given the go-ahead to design, construct, and operate the 10,000 SCFM proof-of-concept test facility.

Question: When will it be complete?

Answer: The present schedule calls for a February 1989 completion date.

Question: What is the status of the E-beam process?

Answer: The E-beam spray dryer proof-of-concept project has been completed. 90 percent SO_2 and 80 percent NO_x control levels were obtained. The economic analysis performed for a full scale plant based on the test results obtained indicated doubtful economic viability as compared to a combination of a commercially available lime spray dyrer used in conjunction with an ammonia based retective catalytic selective process for NO_x control (commercialized in Japan). Thus there is no interest that we are aware of in commercializing this process.

The E-beam/ammonia process is currently being tested at the proof-of-concept level. Preliminary results indicate that 95 percent SO_2 control and 73 percent NO_x control were obtained at a dose of 3.0 megarads at an ammonia stoichiometry less than unity. Testing and economic analysis are scheduled to be completed by the end of the fiscal year.

Question: Is there interest in commercializing the technology?

Answer: For the E-beam spray dryer process, there is no interest that we are aware of in commercializing this process. For the E-beam/ammonia process, it is not possible to determine interest in commercialization of this process at this time.

Gas Stream Cleanup

Question: Your testimony last year (p. 149) attested to the importance of gas stream cleanup. Why are you reducing it by almost 50% in FY 1987?

Answer: The pressurized fluidized bed (PFB) control devices have reached the "proof-of-concept" stage with testing to be supported under the PFB program at Grimethrope. For the gasification turbine and fuel cell gas stream cleanup programs, the concepts being evaluated are not at the more expensive sub-pilot/pilot scale stages for testing. Therefore, it is considered prudent to continue the lower cost bench/lab scale testing for another year (FY 1987) prior to proceeding to the larger scale tests.

Question: Have the concepts been commercialized?

Answer: No, most of them are at the laboratory scale stages.

Question: Is there a lot more industrial support than last year?

Answer: There does not exist any precise data which compares industrial support from FY 1985 to FY 1986. However, the industrial sector, including gas industry, utility, petroleum refining, and coal manufacturing recognize the value of sulfur, chlorine, alkai and particulate control technologies for their commercial processes such as catalyst protection for gas shift conversion processes and protection of downstream power conversion equipment for power generation from the various hot off gases from these processes.

Question: For pressurized fluidized bed (PFB) combustion you terminated sub-pilot scale work on alkali control in FY 1986. Why?

Answer: The sub-pilot scale work was not initiated since the alkali control devices are at the bench scale and appear to require much more effort at that level of development before any of these devices can be considered for sub-pilot testing. Further, the available test data indicates that at normal PFB bed temperatures of 1550° to 1650°F alkalies are held by the particulates thus the alkalies are not in the damaging vaporous form. Particulate removal devices appear sufficient to maintain acceptable alkali levels at the 1550° to 1650°F operating conditions. Therefore, alkali control would not appear to be required for the conventional first generation PFB power systems.

Question: What does "sub-pilot" scale mean?

Answer: Sub-pilot scale is a generic term that encompasses test article sizes somewhere between bench and pilot scales.

Question: Is that considered "proof-of-concept"?

Answer: "Proof-of-concept" size varies for each contaminant control device and must meet the pre-established test criteria that is considered acceptable for demonstrating that the specific contaminant control device has minimal risks for scaleup by the private sector to commercialization, which usually is considered to be at the pilot scale step or larger. For example, a cyclone particulate control device could be tested for "proof-of-concept" at a much smaller scale than the more advanced positive type filters such as a ceramic bag.

Question: Are you supporting testing at NYU in FY 1987? Why not?

Answer: Actual particulate testing at NYU will be completed in FY 1986; however, evaluation and analysis of test data will continue into FY 1987. The next test demonstration scale for the PFB particulate control devices is pilot scale testing. Pilot scale test plans for FY 1987 include the use of the Grimethorpe facility with EPRI to test selected particulate control devices. This program is being conducted under the PFB Combustion Systems Program.

Question: Why are you terminating the proof-of-concept program for PFB cleanup devices?

Answer: They are not being terminated. Current plans are for the proof-of-concept testing of PFB cleanup devices to be conducted under the PFB Combustor Program utilizing the Grimethorpe facility jointly with the Electric Power Research Institute.

Question: Why are you terminating work on second-generation particulate cleanup concepts for PFB's in FY 1986?

Answer: The second generation devices will not be funded in FY 1986/1987 because the second generation particulate devices require a much longer development time frame, and the nearer term first generation devices have obtained very promising test data which appears sufficient for supporting the goals for the PFB combustor coal fired power system.

Question: Won't this work be important to "clean coal technology" programs that use PFB's?

Answer: The first generation particulate devices should sufficiently support the "clean coal technology" PFB power systems.

Question: Why are you deferring the FY 1986 funds for direct-fired gas turbine cleanup?

Answer: To date, results from several SO_2 control projects have been very promising with projected control meeting New Source Performance Standards (NSPS); however, this R&D is not considered ready for on-stream scaled-up lab or pilot scale tests. The funds available in FY 1986 were considered adequate to provide for continuation of R&D without the additional appropriations.

Question: It looks as if you are just delaying the program for a year. Why is that a good idea?

Answer: The key for development of the direct coal-fired power system is control of the contaminants (particulates, alkali and sulfur, etc.) at high temperature and high pressure conditions. Development of sulfur control methods (SO_2) at the 2300° to 2500°F temperature range is extremely difficult and is presently at the lab/bench scale stage. As stated in the previous answer, results from several SO_2 control projects have been very promising with projected control meeting NSPS. However, this R&D is not considered ready for on-stream scaled-up lab or pilot scale tests. Additionally, the mainstream direct coal-fired power system has not reached a stage establishing the direct coal-fired system operating parameters (temperatures and pressures, etc.).

Surface Coal Gasification - Gas Stream Cleanup

Question: In cleanup systems for coal gasification turbines it appears you are halting all work above the bench scale level. Is that correct?

Answer: The research and development work on clean up systems for coal gasification is being continued at several stages in the development cycle (bench scale, process development unit, pre-pilot plants, etc.) depending upon the particular project or concept being considered.

Question: What would be considered proof-of-concept for these cleanup systems?

Answer: It should be emphasized that proof-of-concept is not necessarily associated with a particular size of experimental apparatus. It depends more upon the concept and the principals upon which that concept depends. In the case of hot gas cleanup systems we believe proof-of-concept can be achieved in facilities available to the program.

Question: Why don't you develop the systems to proof-of-concept size?

Answer: It is our opinion that each concept is being developed to the proof-of-concept stage as long as the results obtained at each of the preceeding phases justifies further support.

Great Plains

Question: You are apparently going to do some work on the sulfur recovery system at the Great Plains gasification plant. What steps are you taking?

Answer: The Stretford Sulfur Recovery Unit was installed to remove H_2S from the Rectisol Unit acid gas stream and to convert the H_2S to elemental sulfur. While the Stretford process is proven in various applications, the unit at the Great Plains Gasification Plant (GPGP) is the first unit in lignite gasification service downstream of Lurgi gasifiers and Rectisol acid gas removal.

Due to the first-of-a-kind application and to the unique process configuration (multiple feed streams, common regeneration), several adjustments to the process and to the equipment were made before, during and after the start-up of the unit. After a variety of modifications to both the venturi and packed absorber sections of the unit, the unit is still having operational problems and has not reached its guaranteed performance level.

The design of the Stretford unit incorporated the treatment of three additional gas streams:

1. Fuel gas from gas cooling and lock gas compression
2. Waste gas from the phosam superstill
3. Overhead gas from the naphtha stripper

A separate absorber was originally installed for the fuel gas, while the two other streams were to be mixed with the waste gas from Rectisol. These three additional streams were flared or incinerated in the boilers during the initial operations in order to minimize start-up problems in the Stretford Unit. Later, when the Phosam waste gas was first introduced to the Stretford Unit it caused a major upset. The sulfur content of the solution in the slurry basin floated to the surface and the centrifuges were ineffective for sulfur separation. The high sulfur content of the solution then upset the operation of the other absorbers. Similar problems occurred when the fuel gas was introduced into the system. Based on this experience it was decided that these gas streams should be kept out of the Stretford Unit and a separate process should be considered for treating them.

The failure to operate the absorber without plugging prompted the modification of the system. Initially the existing nozzles of the venturis were replaced with new nozzles of the type used successfully in the Stretford Unit of Exxon's Benitia refinery. Subsequently, two parallel venturis in one of the trains were repiped to operate in series with and without the downstream packed absorber section. The new nozzles and the two venturis in series, however, did not succeed in reducing the H_2S content low enough to avoid plugging in the packed section, and without the packed section, the H_2S content was not reduced to the required level. Increased solution feed rates improved the performance of the venturis but not sufficiently. Tests using three-stage venturis without a packed section showed improvement in H_2S removal at high liquid to gas ratios. Tests with four-stage venturis have also been performed. These tests inidcated that four- or even three-stage venturis can be effective in reducing H_2S to the required 100 ppm level. However, it will be very expensive to install and operate such a system because of a high liquid to gas ratio requirement.

On September 30, 1985, DOE authorized ANG to proceed with a capital improvement project to permit the conduct of caustic wash tests on the Stretford absorber column. For the caustic wash test the packing was replaced with mini-rings in absorber "D" and chemical cleaning of the packing with hot caustic solution will be performed when plugging starts to occur in approximately 4-6 weeks. The testing of this project will include three complete cycles. The success of this full-scale pilot project will allow the operation of the unit at close to design H_2S removal efficiency and provide a relatively simple and safe means of cleaning the packing in a short period of time. This process has been successfully demonstrated in commercial scale by Chevron at Carter Creek, Wyoming, and also tested in a bench scale pilot plant at GPGP. The spent caustic will be collected and will be used as makeup to the Stretford solution. These tests were initiated in early January 1986. To date, results have not been promising.

Question: Does this involve any R&D work?

Answer: Yes, DOE has approved a GPGA capital improvement project to install a Stretford test facility owned by the EPA. Estimated cost of the project is $500,000. This facility will allow testing of various gas streams for process and operating improvements to reduce sulfur emissions from the phosam off-gas, azeotrope, naphtha stripper, methanol scrubber off-gas, prewash flash and lock gas streams.

Question: Is this supposed to be a commercial system?

Answer: The originally installed Stretford Sulfur Recovery Unit is a proven commercial system in various applications, and the caustic wash system has been successfully demonstrated in commercial scale by

Chevron at Carter Creek. As discussed previously, the unit at the Great Plains Coal Gasification Plant is the first unit in lignite gasification service downstream of Lurgi gasifiers and Rectisol acid gas removal.

Question: If it does not work right, is this an area where DOE should spend some of its research funds?

Answer: Currently, efforts are underway to establish the status (technical, operational, etc.) of this technology, identify parties that are currently doing studies on Stretford, and locate facilities where research and development studies can be performed. It is anticipated that, if needed, a cooperative R&D effort can be initiated that will benefit from the information, experience and joint funding of interested parties both in government and the private sector.

Waste Management

Question: Your key activities state you are completing Phase I R&D for extracting energy from coal preparation wastes. What is Phase I?

Answer: Phase I is the completion of the laboratory/bench scale evaluation of the processes for extracting energy from coal preparation wastes.

Question: What would be the next logical step in developing such a process?

Answer: The next logical step would be to conduct a technical and economic analysis.

Advanced Research and Supporting Technology

Question: In advanced research in both coal gasification and coal liquefaction you are drastically reducing the program in FY 1987; by 70% in gasification and 50% in liquefaction. What is your rationale for this?

Answer: The rationale for these reductions was the pressing need for deficit reduction as a result of the Gramm-Rudman-Hollings Act and the technical judgement that a balance between advanced research and advanced process development in both coal liquefaction and coal gasification was necessary. Thus, in coal liquefaction, approximately equal amounts are provided for advanced research, advanced process development (direct liquefaction) and advanced process development (indirect liquefaction). This allows for promising new ideas and concepts that are discovered in the advanced research program to be tested out under more realistic and practical experimental conditions.

Question: Isn't liquefaction, for example, one of the longest term technologies in your program?

Answer: Liquefaction is, indeed, one of the longest term technologies in our programs.

Question: Isn't it from advanced research that you would get the ideas to make liquefaction and gasification processes more efficient, cheaper, and more environmentally sound?

Answer: It is anticipated that the advanced research program will provide the ideas and concepts that will be developed further in the advanced process development programs.

Question: Are there any sound reasons outside of reducing the budget deficit to reduce the programs in advanced research and supporting technology?

Answer: The one overriding consideration in the reduced FY 1987 budget request is concern for the budget deficit. There remains, however, recognition that we must sustain an aggressive, advanced research program that is directed toward the scientific and technical areas that underlie the development of all fossil energy technologies. As a result, funding for the AR&TD program and advanced research total $30,812,000. This is about 21 percent of the FE budget request — a significantly larger percentage than in previous years. We are maintaining a balance between longer-term and shorter-term research.

Advanced Research and Technology Development

Question: Please provide a breakdown of the amount of support in FY 1985, 1986, and 1987 in AR&TD for PETC, METC, universities, national labs, and industry.

Answer: The FY 1985, FY 1986 and FY 1987 funding profiles for AR&TD follow:

Budget Authority
($ in thousands)

	FY 1985 1/	FY 1986	FY 1987
In-House R&D (METC)	1,401	1,835	1,716
In-House R&D (PETC)	3,393	1,006	1,150
"Defederalized" Energy Technology Centers	2,210	913	955
National Laboratories	14,829	10,184	8,889
Other Federal Agencies	562	390	0
Universities	8,039	10,142	9,100
Industry	9,245	9,379	5,414
Total	39,679	33,849	27,224

1/ Includes $8,875,000 that is associated with the Coal Liquefaction Program ($5,511,000) and the Surface Coal Gasification Program ($3,364,000).

Question: If your overall fossil energy program is being drastically reduced, what is the significance of your international activity?

Answer: In FY 1987, FE international activities are based on the President's budget of $150,090,000 and include twenty projects. Seven of the twenty projects will be cost-shared and the remaining thirteen will be task-shared. The work provides an opportunity for the Department to monitor and learn from advances in other countries, to get the most new knowledge per dollar invested.

Question: What is the magnitude of funding for international agreements?

Answer: The FY 1987 international program will include twenty projects, seven of which are cost-shared and the remaining thirteen task-shared. Of the seven cost-shared projects, three were funded with prior year funding per the shared-payment agreements (one of which will terminate in FY 1987), two will be funded from other countries, and two will require an FE transfer of funds in the amount of $870,000. The task-shared projects are funded within ongoing programs -- they serve as a mechanism to avoid duplication of effort.

Question: Please provide for the record a recap of the kinds of agreements you have and their funding level.

Answer: A recap is provided in the following table.

FE ACTIVE INTERNATIONAL AGREEMENTS - JANUARY 1986

Type of Agreement	Title	Country Participants		Duration	Funding Level
BILATERAL (General Agreement)	Development of Technology Utilizing the Site of the Triunfo Coal Deposits in Rio Grande Do Sul	Brazil	U.S.	5/26/84-Indef.	N/A
BILATERAL (Implementing Agreement) Cost-shared)	Exchange of Technical Information and Cooperation in the Field of UCG	Brazil	U.S.	1/21/85-1/21/90	Funded by Trade Development Program of Dept/State FY85 — FY86 $700,000
BILATERAL (General Agreement)	Tar Sands and Heavy Crude Oil	Canada	U.S.	6/4/79-12/4/89	N/A
BILATERAL (Implementing Agreement) Task-shared	Resource Characterization of Tar Sands	Canada	U.S.	6/4/79-12/4/89	N/A
BILATERAL (Implementing Agreement, Task-shared)	Steamflooding with Additives, Tar Sands	Canada	U.S.	9/13/82-12/4/89	N/A

Type of Agreement	Title	Country Participants		Duration	Funding Level
BILATERAL (Implementing) Agreement Task-Shared)	Dissemination of Information	Canada	U.S.	9/12/82-12/4/89	N/A
BILATERAL (Implementing Agreement Task-Shared)	Monitoring Frontal Movements in Thermal Recovery	Canada	U.S.	1/82-12/31/87	N/A
BILATERAL (Implementing Agreement Cost-shared)	Conversion of Methanol to Gasoline/Olefins	FRG	U.S.	3/20/80-3/20/86	Total FE funding of $10.5M appropriated by FY 1984
BILATERAL (General Agreement)	Cooperation in Energy Research and Development	Finland	U.S.	11/6/80-11/6/90	N/A
BILATERAL (PASA Agreement)	Implementation of Alternative Energy Resources and Development Project in Coal and Biomass Conversion in India	India	U.S.	3/25/83-6/30/86	Funded by U.S.A.I.D.
BILATERAL (General Agreement)	Cooperation in Energy Research and Development	Israel	U.S.	6/3/84-6/3/89	Three continuing projects in Oil Shale R&D. FY 1987 funding approximately $100,000

Type of Agreement	Title	Country Participants		Duration	Funding Level
BILATERAL (Implementing Agreement Task-shared)	Exchange of Information and Personnel	Israel	U.S.	6/3/84-6/3/89	N/A
BILATERAL (Implementing Agreement Cost-shared)	Supercritical Extraction Depolymerization of Israeli Oil Shales	Israel	U.S.	10/1/84-10/1/87	FY85 $50,000 FY86 $50,000
BILATERAL (Implementing Agreement Cost-Shared)	Theoretical Aids to Improve Blasting Efficiences in Oil Shale	Israel	U.S.	10/1/84-10/1/87	FY85 $70,000 FY86 $76,000
BILATERAL (Implementing Agreement Cost-shared)	Fate of Organic Sulfur in U.S. and Israeli Oil Shale	Israel	U.S.	10/1/84-10/1/87	FY85 $100,000 FY86 $100,000
BILATERAL (Implementing Agreement Cost-Shared)	Production of Alternative Fuels by Low-Temperature Low-Pressure Coal Conversion	Israel	U.S.	10/1/84-10/1/87	Total Funding appropriated in FY 84 of $150,000
BILATERAL (General Agreement)	Cooperation in Fossil Fuels Research and Development	Italy	U.S.	1/25/85-12/5/90	N/A

Type of Agreement	Title	Country Participants		Duration	Funding Level
BILATERAL (General Agreement)	Cooperation in R&D in Energy and Related Fields	Japan	U.S.	5/2/79-5/2/89	N/A
BILATERAL (General Agreement)	Cooperative Laboratory Relationship	Korea	U.S.	11/6/81-11/6/86	N/A
BILATERAL (General Agreement)	Cooperation in Petroleum Research and Development	Mexico	U.S.	6/20/83-6/20/88	N/A
BILATERAL (Implementing Agreement, Task-shared)	Numerical Fluid Dynamics and Complex Mass and Heat Transport	Mexico	U.S.	6/30/83-9/30/86	N/A
BILATERAL (Implementing Agreement, Task-shared)	Chemical Process Modeling	Mexico	U.S.	6/20/83-9/30/86	N/A
BILATERAL (General Agreement)	Cooperation in the Field of Fossil Energy Research and Development	PRC	U.S.	6/16/85-4/16/90	N/A
BILATERAL (General Agreement)	Collaboration in Energy Research and Development	U.K.	U.S.	10/18/84-10/18/89	N/A

Type of Agreement	Title	Country Participants		Duration	Funding Level
BILATERAL (General Agreement)	Energy R&D	Venezuela	U.S.	3/6/80-3/6/90	N/A
BILATERAL (Implementing Agreement Task-shared)	Joint Characterization of Heavy Crude Oil	Venezuela	U.S.	7/10/80-3/6/88	N/A
BILATERAL (Implementing Agreement Task-shared)	Cooperation in Supporting Research	Venezuela	U.S.	7/10/80-8/6/88	N/A
BILATERAL (Implementing Agreement Task-Shared)	Evaluate Past and Ongoing EOR Projects	Venezuela	U.S.	7/10/80-3/6/90	N/A
BILATERAL (Implementing Agreement Task-shared)	EOR Thermal Process	Venezuela	U.S.	9/29/80-9/30/86	N/A
BILATERAL (Implementing Agreement Task-shared)	Coal Preparation, Combustion, and Related Analytic Technology	Venezuela	U.S.	2/5/82-3/6/88	N/A

Type of Agreement	Title	Country Participants		Duration	Funding Level
BILATERAL (Implementing Agreement Cost-shared)	Subsidence Due to Fluid Withdrawal	Venezuela	U.S.	7/17/83-12/3/86	Fully funded by Venezuela
BILATERAL (Implementing Agreement Cost-shared)	On-Site Training of Petroleum Engineers	Venezuela	U.S.	3/14/84-3/6/88	Fully funded by Venezuela

Type of Agreement	Title	Country Participants	Duration	Funding Level
MULTILATERAL (Implementing Agreement Cost-shared)	Coal Research Service	Australia Austria Belgium Canada Denmark Germany Ireland Japan Netherlands New Zealand Spain Sweden U.K. U.S.	1975-Indef.	FY85 $685,000 FY86 $722,400 FY87 $770,000
MULTILATERAL (General Agreement)	Coal/Oil and Other Coal/Liquid Mixtures	Canada Italy Japan Netherlands Spain Sweden U.K. U.S.	3/23/81-Indef.	N/A
MULTILATERAL (Implementing Agreement Task-shared)	Coal/Liquid Mixtures Exchange of Base Technology Information	Canada Italy Japan Netherlands Spain Sweden U.S.	12/1/82-12/31/88	N/A
MULTILATERAL (Implementing Agreement Task-shared)	Enhanced Oil Recovery	Australia Austria Canada Denmark Egypt Germany Japan Norway U.K. U.S.	5/22/79-Indef.	N/A
MULTILATERAL (General Agreement)	Coal Combustion Science	Australia Canada Denmark Netherlands U.S.	3/27/85-3/27/88	N/A

Question: The budget justification (p. 44) states that "The requested funding will insure that most environmental safety and health compliance activities will be continued." Why most?

Answer: We intend to participate jointly in the audits conducted by the Office of the Assistant Secretary for Environment, Safety and Health, thereby reducing costs for areas of specialized expertise, e.g., industrial hygiene, fire protection, etc. Therefore, in cooperation with the Office of the Assistant Secretary for Environment, Safety and Health, all compliance activities will be continued.

Question: What won't be done?

Answer: The Office of Fossil Energy, in cooperation with the Office of Environment, Safety and Health, will accomplish all necessary compliance activities.

Question: What is the significance of those things that won't be done?

Answer: All necessary compliance activities will be done.

Question: What would it cost to continue all compliance activities?

Answer: All compliance activities will be accomplished although not solely within Fossil Energy resources. The expertise of the Assistant Secretary for Environment, Safety and Health will be utilized for EH&S audits of field facilities.

Question: Why do you need level funding in the generic "technical and economic analyses" and "technology base synthesis" programs when your fossil budget is only half what it is this year?

Answer: The "technical and economic analyses" budget category encompasses a number of activities that are not particularly sensitive to the overall level of the Fossil Energy R&D budget. For example, the U.S. commitment to the London-based International Energy Agency coal research service is funded from this budget category and comprises approximately 1/3 of the technical and economic analyses budget. Some of the technical and economic analyses funding is ultimately used to support Fossil Energy positions on various issues, particularly where there are major regulatory and legislative proposals to be evaluated. The need for these kinds of analyses has tended to increase in recent years. Finally, the technical and economic analyses activities support studies focusing on future trends relevant to the direction of fossil energy R&D programs.

Level funding is required for the technology base synthesis program because this is an important source of new ideas for the AR&TD program. Two examples of new programs include the following two funded in FY 1986:

- The biological removal of organic sulfur and metals from coal, initiated at the Idaho National Engineering Research Laboratory. This work differs from other studies investigating the application of biological techniques to coal processing in that it seeks to determine the fundamental mechanisms involved in using microorganisms to degrade the organic compounds in coal. Ultimately, this should provide insights which should enable us to engineer new organisms custom designed to perform specific functions such as coal desulfurization, or gasification, or liquefaction, at rapid rates and at moderate temperatures.

- A new study of catalyst formulation using computer-aided design techniques at the Sandia National Laboratory/Albuquerque. This study is unique in trying to use sophisticated interactive computer graphics techniques developed for manufacturing operations to help select catalyst supports and structures.

Wilsonville Liquefaction Pilot Plant

Question: Is the contractor asking for additional funds in FY 1987?

Answer: Southern Company Services, the contractor for Wilsonville, is not asking for additional funds in FY 1987. In their testimony to Congress on the FY 1986 Liquefaction budget request, they stated that operations of Wilsonville in FY 1986 would complete the Wilsonville program on advanced staged liquefaction process development.

Question: Then all you are saving is the $1.3 million in the deferral?

Answer: That is correct.

Question: Isn't that less than your estimated termination costs?

Answer: As a result of deferral, termination of Wilsonville activities on April 20 would result in net FY 1986 savings of $730,000 after termination costs. The estimated termination cost is $1.5 million. It should be noted, however, that if the deferral were overturned, termination costs would still be incurred at the end of the period of operation.

Question: You have recently completed a report on the use of the Wilsonville facility after FY 1986. Have you ascertained whether there is any industrial interest in cost-sharing the continued operation of the facility?

Answer: We believe that there is some industrial interest in cost sharing the continued operation of the facility.

Question: Are you aware that AMOCO is trying to generate support?

Answer: We are aware that AMOCO is trying to generate industrial support for a consortium to cofund continued Wilsonville operation in a joint venture with DOE.

Question: Have they asked for your help?

Answer: AMOCO has informed us of their activities, and sent an information package to us describing their efforts to form a consortium to cofund continued Wilsonville operation.

Question: Do you know if they have had any success?

Answer: We do not know what success they have had to date.

Question: Have you discussed the facility with EPRI?

Answer: We are continuing to discuss the Wilsonville facility with EPRI.

Question: If so, what is their position? If not, why haven't you?

Answer: They have stated that they are not in a position to provide funding for Wilsonville operations in FY 1987, but they have expressed interest in the idea of an industrial consortium to cofund operations in a joint venture with DOE. Their contribution would be to provide the use of the Wilsonville facility.

Question: Will "co-processing" or "true close-coupled" liquefaction be ready for consideration at a scale larger than bench scale in FY 1987?

Answer: Bench scale research is continuing in both co-processing and catalytic close coupled liquefaction. In FY 1987, both of these could be ready to be considered for larger scale development.

Coal Liquefaction

Question: Your liquefaction budget is only $9.1 million in FY 1987. Isn't this one of the longest term technology areas in fossil energy? Why, than, are you reducing it by 71%?

Answer: Coal liquefaction is a long term technology area. The budget reduction reflects the priorities we have set within our efforts toward deficit reduction with, a significant portion of the proposed reduction resulting from ending proof-of-concept activities. In FY 1987 we propose to limit our efforts to more generic, long-term, technology-based research and development efforts. Many of the reduced activities do not fit these criteria.

Question: Isn't it true that almost our entire import dependency is on liquid fuels?

Answer: Yes, most of our fuel importation is crude oil or refined petroleum products.

Question: Why are you walking away from that area?

Answer: The Department believes that the Coal Liquefaction program is an integral part of the over-all Fossil Energy effort and that a viable, balanced, technology-based research and development program has been proposed for FY 1987. The $9,147,000 requested for FY 1987 provides for technology-base research conducted by ETC's, universities, national labs and selected industrial partners. In addition, funding could be available to develop liquefaction technologies through the Clean Coal Technology Program. The current and projected economic situation for the next several years does not warrant scaleup of the currently demonstrated processes, because it is not economic. The longer-range research that the FY 1987 budget focuses on at least has the possibility of being economically viable in the 1990's when our NEPP projections show oil prices increasing again.

Question: Briefing charts show you completing all industrial work in FY 1987. How will keeping all the work internally at PETC keep a viable research effort going in industry?

Answer: The in-house research program at the Energy Technology Centers (ETC) establishes a technical base that is supplemented and enhanced by industrial, university and national laboratory research. It should be noted that Fossil Energy maintains a very strong technical transfer program at the ETC's to help transfer appropriate technology to the private sector. Technology transfer is accomplished through such activities as program reviews, symposiums and conferences with strong private sector participation, the publication of numerous research articles and fact sheets, and through the maintenance of technical ADP data bases that are accessed by the private sector.

Question: What is the amount provided to ETC's, universities, national labs, and industry in FY 1985, FY 1986, and FY 1987?

Answer: The following table summarizes the Coal Liquefaction program for FY 1985, FY 1986, and FY 1987.

Budget Authority
($ in thousands)

	FY 1985	FY 1986	FY 1987
In-House R&D	3,350	4,367	4,145
"Defederalized" Energy Technology Centers	900	1,543	500
National Laboratories	3,681	3,036	0
Other Federal Agencies	0	60	0
Universities	2,041	2,610	0
Industry	15,627	20,004	4,502
Total	25,599	31,620	9,147

LaPorte

Question: The LaPorte liquid methanol facility is in some respects like Wilsonville. The industrial partners, as they did in testimony last year, have indicated that funding is only needed through FY 1987 to complete the work required. Have you been negotiating with the contractor for continued operation of LaPorte?

Answer: Discussions have been held with all participants in the Liquid Phase Methanol project regarding continued operation with FY 1986 funds which were included in the appropriation. However, the FY 1986 funds for continued operation of the LaPorte facility were deferred. The project is continuing through April 20, 1986.

Question: Are you aware of the interest of EPRI and TVA in scaling up this technology?

Answer: Yes, EPRI and TVA have informed us that the industrial participants in the existing Liquid Phase Methanol Project plan to submit a proposal to DOE in response to the "Clean Coal" solicitation. They will prepare to scale up the technology at the TVA Shoals Fertilizer R&D facility located at Muscle Shoals, Alabama.

Question: Wouldn't it be much less risky to scale up the technology if additional pilot data were available from this facility?

Answer: The LaPorte PDU has operated successfully, generating useful data, during the past two years. The Department believes that commercialization of this technology is the responsibility of the private sector and industry can determine whether additional data is required. A cooperative R&D venture is one vehicle through which industry could demonstrate its interest in continued operation of the facility and ask the Department to participate.

Question: Are there other technologies you are investigating that could be scaled up to this size?

Answer: Yes, however, the LaPorte facility would have to be modified. Slurry phase synthesis of liquid hydrocarbons could be investigated in this unit in the near future if a smaller, intermediate scale, reactor were installed. New catalysts could also be evaluated dependent upon further catalyst development results and facility redesign. Such activities and capital investments are not at the top of our priority list for new activities, however.

Question: When would they be ready?

Answer: Slurry phase synthesis of liquid hydrocarbons could be investigated in this facility whenever the facility has been modified. Evaluation of new catalysts (for either alcohol or liquid hydrocarbon production) could not be considered until the catalysts are further developed in the laboratory. This will require four or five years.

Question: Are you cancelling them also?

Answer: No, research is presently continuing at the bench scale size on technologies that could be scaled up to this size if industry is interested.

Combustion Systems - AFB

Question: What is the status of the TVA atmospheric fluidized bed (AFB) demonstration plant?

Answer: The 160 TVA AFB demonstration project is in the detail design and construction phase. Ground breaking at the Paducah site in Kentucky was initiated in September 1985. The boiler steam drum is scheduled for delivery during FY 1986. Plant construction is scheduled for completion in mid-1988.

Question: Why are you terminating bench scale testing of advanced AFB concepts in FY 1987?

Answer: Bench scale testing of advanced AFB concepts is not being terminated. The circulating-bed concept by the M.W. Kellogg Company is scheduled for completion of bench scale testing in the fourth quarter of FY 1986 while the spouted-bed concept by Battelle Columbus Laboratories will not complete bench scale testing until the end of the first quarter of FY 1987 using FY 1986 funds. At that time, both the Kellogg and Battelle contracts will have reached completion and sufficient data will have been generated for a private sector decision on future scale up and commercialization. AFB technology is currently establishing itself in the marketplace, and this will provide opportunities and incentives for further refinement of the technology by the private sector.

Question: How long would it take to complete the two projects you started in FY 1986? How much would it cost?

Answer: Both projects will be completed by January 1987. No FY 1987 funds will be required to reach project completion.

Question: Why is it allowable to do bench scale testing of special applications instead?

Answer: Bench scale testing for advanced concepts will be complete by January 1987. Special applications efforts are directed at boiler applications in the 1,000 - 50,000 lb/hr steam range while advanced concepts are for applications in the 75,000 - 200,000 lb/hr steam range. Awards for special applications are scheduled for late FY 1986 or early FY 1987. At that time, bench scale testing for this technology will just be initiated.

Combustion Systems

Question: What industrial interest have you found in pursuing commercial, institutional, and residential sectors?

Answer: Market analyses indicate that a great deal of potential exists for displacing premium fuels in the commerical, institutional, and residential sectors. Many manufacturers and engineering firms have asked to be put on the bidders list for the Special Application solicitation. Responses to the solicitation are due March 26, 1986.

Combustion Systems - PFB

Question: In pressurized fluidized bed (PFB) technology, what is the status of proposed testing at the Grimethorpe facility in England?

Answer: Negotiations have been completed to finalize the cooperative agreement, for a U.S. test program, between the United Kingdom (UK) National Coal Board and the U.S. DOE. A memorandum of agreement has been signed between the Department of Energy, EPRI and the UK National Coal Board. Additionally, negotiations are in progress between the U.K. National Coal Board and a U.S. boiler manufacturer to furnish a tube bundle for erosion testing.

Question: Who is involved from the industrial sector?

Answer: It should be noted that the National Coal Board is responsible for the operation and maintenance of the Grimethorpe Facility. The DOE has contracted to purchase operating time for its R&D program. This effort will be accomplished within the overall United Kingdom test program. Industry representatives include EPRI and a yet to be determined U.S. boiler manufacturer.

Question: What will be tested in the facility?

Answer: The DOE test program includes the testing of a United States designed tube bank and a coal slurry mixture feed system. A hot gas cleanup device contributed by EPRI will also be tested.

Question: When is it expected testing will start?

Answer: The U.S. test program is scheduled to begin in mid-calendar year 1987.

Question: What is the total funding involved and who is contributing?

Answer: The total estimated cost for the U.S. DOE program is approximately $5,000,000. In addition, the British National Coal Board will contribute approximately $26,000,000 to operate and maintain the Grimethorpe PFB test facility. EPRI is expected to contribute approximately $5,000,000 to test advanced hot gas cleanup devices in an EPRI-sponsored slipstream rig.

Question: What has been the industrial interest in your advanced concepts procurement for PFB systems?

Answer: Several proposals have been received in response to a Request for Proposals (RFP) for Advanced Pressurized Fluidized Bed Combustion concepts.

Question: How many contracts will be awarded?

Answer: It is anticipated that one contract will be awarded as a result of the RFP.

Question: How many contractors could proceed in the program based on the FY 1987 budget?

Answer: It is anticipated that one contractor would proceed in the program in FY 1987.

Question: A July 1, 1985 press release estimates the cost of the program at $25 to $30 million over 5 years. How do you explain the minimal funding in FY 1987 ($1,000,000) based on that estimate?

Answer: The Advanced PFB concepts program consists of a multi-phase cost-shared effort. Due to delays in the procurement process, prior years appropriations of about $3.7 million were available during FY 1986 for these activities; therefore, the FY 1987 budget request is sufficient for continuing the efforts. Activities planned for FY 1987 include detailed system definition and program outline and could be accomplished within the funding request.

Advanced Combustion

Question: Briefing charts show completion of Phase I of the AVCO slagging combustor in FY 1986. What is Phase I?

Answer: Phase I of the AVCO slagging combustor project involves testing of an existing 10 MBTU/hour combustor to determine design parameters for a 20-25 MBTU/hour developmental combustor.

Question: What were its results?

Answer: Design of this combustor was initiated and the unit is presently being fabricated. Combustion and emission evaluations will be made on this unit. Test results will be available later in the year.

Question: What additional phases were originally anticipated and what is their cost?

Answer: No additional phases were anticipated.

Question: Please explain how the PRDA issued in FY 1986 relates to the original procurement in light industrial, commercial, and residential areas.

Answer: The PRDA issued in FY 1986 was the only procurement planned for the light industrial, commercial and residential areas. The one issued meets our requirements.

Alternative Fuels

Question: Please explain what is different about the fuels you will be investigating in commercial and residential applications in alternative fuels compared to heat engines and utility fuel?

Answer: Utility applications will accept an approximately 200 mesh coal-in-liquid carrier with or without stabilization and having moderate ash levels (less than 4%). Commerical and residential systems will require a coal product less than 200 mesh (70 microns) in size with a range of additives for varying stability and rheology requirements. Ash level requirements are nominally in the .5% to the 2% range. Heat engine applications represent the most critical fuel specifications with ash and sulfur levels nominally less than .5% with specific attention to alkali metal levels. The sulfur level required in the fuel in each application is determined by the applicable environmental emission regulations which for most applications will require 90% removal.

Phosphoric Acid Fuel Cells

Question: Is it not correct that the Electric Power Research Institute (EPRI) is also reducing funding in the fuel cell area? If so, won't the combination of reductions from both EPRI and DOE make it more risky to industry to continue commercial development of the phosphoric acid fuel cell?

Answer: Funding will be maintained in 1986 at reduced levels by EPRI on all their fuel cell research projects. The Department believes that sufficient funding will be available for these projects to sustain private sector commercialization activity. Federally-supported and private sector R&D and proof-of-concept testing has brought the phosphoric acid fuel cell to the point where business entities like EPRI and the Gas Research Institute (GRI) are making the necessary investment decisions that are a normal part of the overall commercialization process. International Fuel Cell Corporation, a Japanese-American joint venture, is currently commercializing the DOE-funded technology and is acccepting orders for the product. In light of this, the Department believes that industry will continue development of the technology, and that industry has already assessed the risk and found it acceptable.

Question: Is it correct that the contractor for the 7.5 megawatt technology is modifying its program to build a 1.5 megawatt pilot plant before building a 7.5 megawatt unit?

Answer: The contractor for the 7.5 MW phosphoric acid fuel cell, Westinghouse, has modified its program to build a 1.5 MW pilot plant because of a collapse in their agreement with a host electric utility and due to slower progress than planned. The decision to proceed with a 1.5 MW pilot plant was made by Westinghouse to stimulate interest among potential utility participants and to proceed with system integration at a lower level of costs. Westinghouse believes that a successful pilot plant demonstration will provide an effective test of the air-cooled technology.

Question: Won't that delay commercial introduction?

Answer: Commercial introduction may be delayed compared to the original hopes of Westinghouse, but Westinghouse considers that the chances of success are improved by incorporating the 1.5 MW pilot plant development and tests.

Molten Carbonate Fuel Cells

Question: In this area you do two things. First, you defer the funds for the direct fuel cell, and second you decide to implement a competitive procurement for full stack development.

In response to a previous staff question you indicate that the deferral will mean a gap from September 30, 1986 to at least June 1987 for Energy Research Corporation in which they would have no funding, even if they won the competitive procurement.

How many people does ERC have working on the direct fuel cells?

Answer: ERC reports they have approximately 25 people working on the DOE funded effort and another 10 people on the EPRI funded effort.

Question: How much do you provide per year?

Answer: $1,676,000 for FY 1984; $2,863,000 for FY 1985; and $3,329,000 for FY 1986. The funding for FY 1986 has been deferred; however, FY 1985 funds are available to fund ERC through the current contract period (September 30, 1986).

Question: What are its total yearly sales?

Answer: Total yearly sales of about $7,000,000 are reported by ERC for FY 1985.

Question: In the face of that, how can you say, as you do in your response to staff, that the gap is not expected to significantly affect the ability of ERC to compete for the follow-on?

Answer: ERC is expected to receive about $500,000 of EPRI funding in FY 1986 and may be successful in obtaining other private sector funds. While their MCFC effort would be scaled back, it is conceivable that an ERC proposal in response to the competitive procurement could result in FY 1987 funding from DOE.

Question: The follow-on contract you anticipate in FY 1987 is for less than the single current year support for either contractor. Do you plan only one contractor?

Answer: The Department anticipates one or more contractors depending on the work proposed, cost sharing proposed, and actual funding available at the time of contract negotiations.

Question: What is the scope of the proposed procurement, and how long will the work last?

Answer: The anticipated contract period is from July 1987 to August 1991, and will include design, fabrication and testing of full scale stacks.

Question: The materials problems of molten carbonate systems are severe. Why do you reduce funding from about $2 million to $800,000?

Answer: The reduced funding request reflects both advances made in materials for MCFC systems and budget restraint.

Question: Have you made any significant progress? If so, please explain.

Answer: Significant progress has been made in developing electrodes which the developer projects will provide 25,000 hours of life under some useful operating conditions, (goals are 25,000 to 40,000 hours) and acceptable electrolyte management has been demonstrated.

Heat Engines

Question: Briefing charts show a reduced program for developing a coal-fired gas turbine engine. Reduced from what?

Answer: The FY 1987 budget request is reduced from the funding provided in FY 1986 for the development of a coal-fired gas turbine engine. The reasoning behind this reduction is that final awards selection resulting from the FY 1985 competitive procurement have not been made, and as a result, there is a carryover of FY 1985 funds and there could be a carryover of FY 1986 funds. These funds and the FY

1987 request will continue the development of this program in a stretched-out mode, but the Department believes this is appropriate given budget constraints and overall Fossil Energy priorities.

Question: What funds would it take to continue the program on the schedule provided for last year?

Answer: Last year's schedule cannot be continued due to delays encountered in the procurement process. The funds requested for FY 1987 in combination with FY 1986 and prior appropriations are adequate to continue the program.

Question: Are you planning to continue combustor development with all four contractors? What would it cost to do so?

Answer: The combustor development activity will be a part of the awards resulting from the FY 1985 competitive procurement. The number of contractors will depend on the funds available and the decision of the selecting official.

Question: What is the reasoning behind reducing the development program?

Answer: The final awards selection resulting from the FY 1985 Program Research and Development Announcement have not been made. As a result, there is a carry over of $5.5 million from FY 1985 and there could be a carryover of FY 1986 funds. These funds and the FY 1987 request will continue the development of the gas turbine technology program in a stretched-out mode, but the Department believes this is appropriate given budget constraints and overall Fossil Energy priorities.

Question: You are also reducing funding for coal-fired diesel applications. Why?

Answer: The Program Research and Development Announcement (PRDA) for coal-fired diesel engine integrated system test validations is expected to be released in August/September of 1986. As a result, the final awards selection resulting from the PRDA will not be made until FY 1987. Therefore, the funds which will not be obligated in FY 1986 will be carried over into FY 1987. The Department believes that these funds and the FY 1987 budget request are adequate to continue the coal-fired diesel program given budget constraints and overall Fossil Energy priorities.

Question: When will you issue your PRDA for an integrated coal fired diesel system?

Answer: The PRDA is expected to be issued in August/September 1986.

Question: What would be the cost to continue multiple contractors in this phase as you are doing currently?

Answer: It will cost approximately $1.5 million per year per contract.

Underground Coal Gasification

Question: In last year's testimony you describe an underground coal gasification field test near Centralia, Washington. (p. 970) What is the status of that test?

Answer: The field test described in last year's budget is still planned as an integral part of the technology base development effort in the subbituminous UCG R&D activities. The original objectives of the test have not changed.

Question: Has the site been changed? Why?

Answer: The site has been moved from the original planned site near Centralia, Washington to a site near the previous Hanna, Wyoming test sites. This change of site was made because of unanticipated heavy taxing and bonding requirements as well as suspected technical inadequacies of the original site, e.g., faulting and a high probability of unacceptable amounts of groundwater that might invade the test. Also the costs of accessing the site and preparing the site area in the highly wooded, hilly terrain had escalated to such an extent that the future viability of the test was in question. The move to Hanna was decided upon by the industrial consortium for several reasons. The coal in the test area is well characterized because of past work in the area, the terrain and the existing infrastructure (roads, power, warehouse, etc.) will serve to keep the costs of the test down. Testing at this site will allow a direct comparison of the operation of a UCG test with the CRIP ignition technique in a horizontally drilled link with the previously tested (at several adjacent sites) reverse combustion linking tests. The only adverse effect of the move has been a six-month delay in the initiation of the test.

Question: What effect does the FY 1987 budget, with no funds available for underground coal gasification, have on this proposed test?

Answer: This test is being over 50 percent co-funded by an industrial consortium. The DOE funds for the test (which will take place in late FY 1987) are those that have been appropriated in prior years ($4.2 million). While some program modification may be required, funds appear sufficient to conduct a viable test. Industry has also shown some willingness to share a larger portion of the burden of funding in selected areas. We also note that underground coal gasification experiments are eligible for support through the $12.5 million cooperative R&D ventures pool.

Question: What would be the cost of supporting the test through FY 1987 as originally proposed?

Answer: The original cost of the test was estimated at $8.4 million, of which DOE was to supply 50 percent both as direct funding and as program support in the form of services, personnel and equipment items.

Question: What funds would be necessary in FY 1987, including support not directly used for testing?

Answer: The utilization of FY 1985 and FY 1986 funding combined with industry cost-sharing, provides adequate funding to complete the test. Therefore, no funds were requested for this program in FY 1987.

Magnetohydrodynamics (MHD)

Question: Testimony before this Subcommittee on February 25, 1986 by Mr. Dave Brown of the MHD Industrial Forum states that the Italians will likely purchase an MHD power train from Russia, partly because of "a DOE spokesman who announced that the U.S. Government had no interest in MHD or the Italian MHD effort even though the United States has an international agreement with Italy which includes MHD development."

Do you know who represented the United States for DOE?

Answer: The actual quote from Dave Brown is somewhat unclear. He appears to be quoting "a DOE spokesman" who made an announcement at a recent International MHD Symposium held in Rome in January, 1986; however, there was no U.S. DOE participant at that symposium.

The most recent contact under the U.S./Italy international agreement was held in December, 1985 when a U.S. delegation went to Italy to participate in a week-long set of meetings as part of the semi-annual review of all activities related to the coal-related elements of the U.S./Italian Memorandum of Understanding (MOU) on energy research and development cooperation. The U.S. representatives at the meetings were Jerry Walsh (U.S. delegation head), Denise Swink (U.S. coordinator of Fossil Energy activities), Howard Feibus (U.S. Co-project officer on the coal preparation, environmental control technologies, coal water mixture, magnetohydrodynamics, combustion, fluidized bed combustion and molten carbonate fuel cell projects), and Larry Strickland (U.S. Co-project officer on the catalytic gasification project). The meeting between the U.S. and Italian MHD co-project officers was a late addition to the meeting schedule and was held on December 4.

Question: Why would such a statement be made?

Answer: The statement was not made. In fact, it was the U.S. MHD co-project officer who encouraged discussions with the Italian co-project officer on MHD cooperation as early as April 1985. Several follow-on phone calls by the U.S. Co-project Officer between April and December, 1985 were necessary because no response to DOE's invitation to cooperate in MHD was ever received. A few days before the U.S. delegation flew to Italy, the Italian MHD Co-project officer requested a meeting.

A meeting was held on December 4, 1985. An obvious misinterpretation of the discussions at that meeting resulted. The U.S. position regarding cooperation with Italy on MHD has not changed since April 1985 and is as follows:

1. The U.S. encourages cooperation with Italy on MHD.
2. Such cooperation can take the form of information exchange or the like. Because of U.S. MHD funding constraints, it is unlikely that the U.S. will be in a position to financially support the Italian MHD retrofit initiatives.
3. U.S. MHD contractors are free to work directly for the Italians on the Italian MHD projects as long as their actions are not in violation of the contract and as long as a commitment of DOE resources is not made.

This position has been communicated to Dave Brown of the MHD Industrial Forum, and the Italian MHD co-project officer within the last two weeks.

Question: Is it correct to say that progress has been made at both the Montana facility and the Tennessee facility in developing integrated testing capability?

Answer: Progress has been made, at both the Component Development Integration Test Facility (CDIF) in Montana and the Coal-Fired Flow Facility (CFFF) in Tennessee, toward developing integrated testing capabilities in the MHD program. Recent progress at the CDIF includes the successful initiation of integrated topping testing utilizing a 50 MW thermal coal-fired combustor. At the CFFF, recent progress includes the installation and initial testing of an electrostatic precipitator in a coal-fired bottoming cycle configuration.

Question: What major activities would be undertaken in FY 1986 and FY 1987 if the June 1984 plan were followed for the program as required by the Continuing Resolution?

Answer: The major activities that would be undertaken at the CDIF in FY 1986 and FY 1987 include longer term tests with existing topping cycle components and the installation of continuous slag rejection and combustor electrical isolation sybsystems. At the CFFF, longer term tests would be conducted with existing components and candidate systems for boiler scale control would be evaluated. The major activities requiring new procurements would include the design, construction and operation of an integrated topping cycle and an integrated bottoming cycle. In addition, a seed regeneration process development program would be initiated, and a conceptual design of an MHD retrofit would be implemented.

Question: Please provide a general plan showing the steps necessary to get to the stage of a coal-fired MHD retrofit, the time necessary for the steps, and approximate estimates of the funding that would be required.

Answer: The major steps required to get to the stage of a coal-fired MHD retrofit include long-term proof-of-concept (POC) testing of the integrated topping and bottoming cycle systems at the CDIF and CFFF, the development and POC testing of a seed regeneration system, and the completion of an MHD retrofit conceptual design. The POC testing is currently scheduled for completion by FY 1990.

Beginning in FY 1987, the following table shows the necessary steps, the time required, and the funding necessary to complete the POC testing program:

	Estimated Cost ($ in million)	Estimated Time (in Years)
o Design, construction and testing of integrated, long duration POC topping cycle.	$48.0	3
o Design, construction and testing of integrated, long duration POC bottoming cycle.	$21.0	3
o Design, construction, and testing of the seed regeneration facility.	$10.0	3
o Completion of conceptual design of MHD retrofit.	$ 0.5	1

Systems studies and supporting research activities are not included. These are rough estimates based on the 5 year POC testing program, funded at approximately $30 million per year, beginning in FY 1985.

Surface Coal Gasification

Question: Has the work at the KRW gasifier been successful?

Answer: The work at the KRW gasifier located in Waltz Mill, Pennsylvania, has produced successful results in a number of technical areas.

Question: What kinds of cleanup systems have been tested?

Answer: These cleanup systems include the development of the agglomerating fluidized-bed gasifier concept and the generation of gasifier mechanistic data that elucidated the relationship between key operational parameters such as temperature, pressure, superficial velocity, bed carbon content, etc., and the chemical, kinetic, and thermodynamic actions controlling ash agglomeration, fluidized bed phenomena, deposit formation, and fines recycle. Tests have been conducted on a wide variety of coal types ranging from Western lignite to Eastern bituminous. These coals have been characterized from a performance and environmental standpoint to provide the necessary data required for process modeling and associated design scaleup. Tests have also been conducted on in-bed desulfurization technology using dolomite and limestone as the sorbent, as well as particulate and alkali metals removal technology using a water quench system and sintered metal filters.

Question: If the facility were to be run in FY 1986 and FY 1987, what additional kinds of testing could be done?

Answer: If operations are continued throughout FY 1986 and FY 1987, we could continue advanced hot gas cleanup studies in connection with integrated systems for electric power production. One study could continue the development of in-bed desulfurization technology and the other study could involve external desulfurization using a zinc ferrite process development unit. The desulfurization systems could be evaluated individually as well as in combination. It would also be possible to continue the operation of the sintered metal filter.

Question: Are there any other facilities in DOE that can test cleanup systems at the scale of this gasifier?

Answer: It would be possible to test hot gas cleanup systems at the scale of the KRW gasifier by modification and operation of th METC 24-inch diameter fixed bed gasifier and the associated PDU system. This testing would apply to somewhat different eventual applications, since the KRW facility uses a fluidized bed gasifier and the sulfur, alkali metals, particulate emissions, and operating condition associated with this type of gasifier are expected to be different from those of a fixed bed reactor.

Question: What are the major obstacles to the economic generation of electric power using integrated gasification combined cycle systems?

Answer: Some of the major obstacles to the economic generation of electric power using integrated gasification combined cycles are considered to be:

o Complexity and high cost of conventional first generation IGCC systems based on oxygen blown entrained flow gasifier and cold gas clean-up processes particularly for systems with capacities less than 300-350 MWe.

o Particulate control at turbine inlet temperatures for second generation air blown fluidized-bed gasifiers.

o Availability of hot gas clean-up systems suitable for integration with second generation IGCC systems operating under varying load conditions.

o Availability of efficient, durable regenerable and/or inexpensive sorbents for sulfur capture at high temperatures.

- Understanding and control of the alkalis ammonia and trace elements that are generated during coal gasification and become part of the fuel gas stream.

Question: What is your program doing to address each of those obstacles?

Answer: The DOE program addresses essentially all of the major obstacles identified. A significant effort is underway in the area of gas cleanup. The technical approaches to sulfur removal include evaluation of in-bed sulfur capture using dolomite and limestone, evaluation of zinc-ferrite based external hot gas sulfur removal systems, evaluation of promising new, more economic, cold gas clean-up systems (e.g., CNG acid gas removal technology etc.). There are also a number of projects being funded to solve the problems associated with control of particulates and alkali metals at the lab/bench scale as well as to investigate new techniques for the development of instrumentation needed to identify and measure these contaminants.

Petroleum

Question: In all categories of the Department's petroleum research, which include "advanced process technology", "enhanced oil recovery", and "oil shale" activities, the FY 1987 program apparently deletes all work with industry, universities, and national labs, and reduces work at the defederalized energy technology centers.

How can you have a balanced research program without integrating these entities?

Answer: The Department plans to have a balanced petroleum research program in FY 1987 by incorporating a basic technology research and development (R&D) program funded through direct appropriations combined with an applied R&D program funded through the pilot cooperative R&D venture pool mechanism. The primary purpose of this $12.5 million pool is to support industrially-performed R&D. This does not exclude participation by the national labs, the Energy Technology Centers, or universities, consistent with the Cooperative R&D Act of 1984. Proposed ventures will be evaluated and judged by the government in terms of their responsiveness to national goals and objectives as well as the quality and value of the proposed venture. The approach will allow industry to join with the government in applied R&D activities that may serve to achieve our energy goals and to reduce those traditional barriers that limit the financial and technical cooperation between the private and the public sectors (e.g., patent positions, proprietary rights, antitrust concerns, etc.). Ideally, the private sector will offer partnership opportunities to DOE, and the Department will be in a position to choose where to invest its venture pool resources.

The joint venture concept is intended to give the private sector greater flexibility, commensurate with their increased financial responsibility, in proposing specific technologies or U.S. resource development strategies and establishing project priorities. This approach is also intended to improve the transfer of any taxpayer-supported research and technology to a strong, internationally competitive U.S. industry and ultimately to transfer it to commercial practice.

Question: How realistic is it to expect industry to come to the fore and provide funds for cooperative R&D in this area when it is clear that industry is cutting back its own research funding?

Answer: There is evidence that industry is willing to do cooperative research. Through the NIPER program, industry is presently contributing up to 60 percent of the funding for a number of "multi-client" projects. Also, the New Mexico Institute of Mining and Technology is receiving in excess of 50 percent of its funding on DOE sponsored research from industry. Cooperative research reduces the risk perceived by each participant, and thus it is possible to achieve increased total support even during a period of financial caution.

Question: For the record, provide the funding in FY 1985, FY 1986, and FY 1987 for each of these programs for ETC's, former ETC's, universities, national labs, and industry.

Answer: Budget Authority
($ in thousands)

	FY 1985	FY 1986	FY 1987
Advanced Process Technology			
In-House R&D	0	0	0
"Defederalized" Energy Technology Centers	2,943	2,351	1,500
National Laboratories	1,161	919	0
Other Federal Agencies	228	38	0
Universities	636	690	0
Industry	396	1,525	311
Total	5,364	5,523	1,811
Enhanced Oil Recovery			
In-House R&D	950	842	309
"Defederalized" Energy Technology Centers	5,270	4,540	4,000
National Laboratories	832	812	0
Other Federal Agencies	0	0	0
Universities	3,025	1,758	0
Industry	1,625	3,502	175
Total	11,702	11,454	4,484

Oil Shale			
In-House R&D	1,741	0	1,644
"Defederalized" Energy Technology Centers	3,453	3,968	0
National Laboratories	5,250	3,631	0
Other Federal Agencies	146	99	0
Universities	553	480	0
Industry	3,485	3,958	1,951
Total	14,628	12,136	3,595
Unconventional Gas Recovery			
In-House R&D	1,479	1,462	1,402
"Defederalized" Energy Technology Centers	282	191	0
National Laboratories	4,437	4,576	3,200
Other Federal Agencies	922	1,100	0
Universities	574	500	0
Industry	2,448	674	650
Total	10,142	8,503	5,252

Question: You state that you are transferring microbial enhanced oil recovery from advanced process technology to the enhanced oil program.

How much work was funded in FY 1986?

Answer: In FY 1986, approximately $566,000 will be spent on microbial enhanced oil recovery (MEOR) to continue investigation of potential environmental pitfalls of MEOR research status and priorities. In addition, work continued on previously funded university studies of promising microbes.

Question: How much is funded in FY 1987?

Answer: In FY 1987, $100,000 of technical base EOR funding will be used to continue environmental MEOR, and additional work might be forthcoming through the Cooperative R&D Venture Pool.

Question: What can be done for $100,000?

Answer: Needs for MEOR research identified in the FY 1986 spring workshop will be broadcast to perspective "venturers" with the anticipation of generating Cooperative Venture Pool proposals.

Question: Your budget (p. 104) states that in FY 1986 you will "define a program of research needs requisite to applying microbial EOR in a production mode". Do you propose to do any of that work in FY 1987?

Answer: In FY 1987, $100,000 of technical base EOR funding will be used to continue environmental MEOR, and additional work might be forthcoming through the Cooperative R&D Venture Pool. In FY 1987, work in microbial EOR may be pursued through NIPER if industry interest warrants.

Question: How much oil is expected to be recovered in the 1990's by enhanced oil recovery (on a daily basis)?

Answer: The National Petroleum Council (NPC), the official advisory committee to the Secretary of Energy, completed a study in 1984 that provided future estimates of potential EOR levels that are utilized by Fossil Energy for planning purposes. While recognizing that EOR processes are price sensitive, the NPC projects that U.S. oil recovery through EOR methods might average 1.0 million barrels per day (bpd) in the 1990's at an average price of $30/barrel, and as much as 1.5 million bpd at an average price of $50/barrel.

Question: How much of that is dependent on developing techniques not currently available to industry?

Answer: Of this production in the 1990's (and the following decade), almost 6 of every 10 barrels from EOR would be produced through development of new techniques not currently available to industry. The balance would be produced through implementation of current technology.

Question: Your budget (p. 109) refers to a National Petroleum Council (NPC) study. Please provide a copy for the committee files.

Answer: A copy of the 1984 NPC report, Enhanced Oil Recovery, is provided to the committee for its files.

Question: You quote the NPC as follows: "only through continued process research and field testing with both industry and government support, can the large volume of hydrocarbons discussed in the report be produced".

If this is the case, how can you justify the drastic reductions in enhanced oil recovery funds?

Answer: The need for continued advanced EOR process development and field testing to reach oil production security levels as urged by the NPC is supported by the FY 1987 budget proposal by providing direct EOR programmatic funds for technical base research plus Cooperative R&D Venture Pool funds. These federally-supported programs should provide for qualified, industry-sponsored research that provides for field testing as well as process development research.

Question: Is it correct that cheaper more efficient technologies must be developed in order to develop a commercial oil shale industry?

Answer: Under current economic conditions, and projections until the 1990's, there is little hope of shale oil being commercially competitive. In the long term, technologies now in the laboratories will be needed to give oil shale a chance at being economically viable in the 1990's.

Question: Is this a long-term, high-risk activity?

Answer: A balanced program of research in oil shale conversion and environmental impact mitigation would have a technology base element to pursue the fundamental, generic research to define the basic mechanisms effecting process. The other element would involve pursuit of promising concepts evolving from the technology base work or from other research arenas where observed phenomena appear to have application to oil shale processing. This latter element does have a degree of risk attached.

Question: Is industry R&D on oil shale also shrinking as is the R&D in enhanced oil recovery?

Answer: There has been a significant reduction in the level of funding for R&D in the oil shale industry. This is reflected in the fact that there are few major active projects.

Question: How many active projects remain in the oil shale industry?

Answer: There is only one active field project remaining in the Oil Shale industry. Union, of course, is continuing its efforts to bring the 10,000 barrel per day Union B system into production. In addition to this field project, Exxon is continuing research at a smaller scale, in its 5 ton per day fluidized bed retort in Baytown, Texas in support of the Australian Rundle project. DOE is also supporting several eastern oil shale conversion projects including the

Hycrude work on hydroretorting; the Cliffs Engineering work in conjunction with Allis Chalmer and the State of Indiana on a roller grate retort concept; and Eastern Shales Research Corporation in conjunction with the State of Indiana on the Geokinetics in-situ retort process. Exxon is also spending approximately $10 million a year to continue development of the Colony project site and conduct mining R&D in concert with the Colorado Mining Association.

Question: In the face of this retrenchment, why is the Department drastically reducing its support of this technology?

Answer: The Department believes that it can conduct an in-house technology base research effort and pursue promising concepts through a Cooperative R&D Venture program. The latter provides a mechanism for industry to pool their reduced R&D dollars and focus efforts on the most critical needs.

Question: What remaining effort will you have in in-situ technology?

Answer: The Department has invested major efforts over the last decade in the development of the data base relative to in-situ retorting of oil shale and now believes that industry should take the next step to demonstrate and commercialize the technology. The DOE will restrict its activities to monitoring and modeling only.

Question: Is it likely that this technology ever will be feasible?

Answer: As evidenced by the successes of Occidental Petroleum and Geokinetics in their in-situ testing and subsequent applications to the Synthetic Fuels Corporation, in-situ processing is technically feasible. From a total resource recovery standpoint, in-situ recovery technologies are the only available practical approaches to recovering the deeper and leaner deposits which represent in excess of 80 percent of the overall western shale resource.

Question: What additional R&D is needed in order to establish the viability of this technology?

Answer: The key research needed to establish the viability of this technology is fragmentation research in concert with an effort to establish retort bed criteria for effective recovery. In other words, capability is needed to enable design of an explosive array to achieve a defined set of criteria in a broad spectrum of geologic settings. The latter requires development of fragmentation prediction models based on fundamental rock properties. Significant advances have been made in both the prediction models and criteria development. Industry interest in these efforts has been expressed.

Unconventional Gas Recovery

Question: Your budget (p. 123) says you are cancelling the stimulation of a horizontal well being drilled in FY 1986. Why?

Answer: The Department believes that the stimulation efforts are a proper role for industry to undertake. In fact, preliminary discussions with industry have indicated that a cooperative Industry/DOE effort to complete these investigations will be proposed.

Question: How much did it cost to drill the well?

Answer: Approximately $1.2 million will be spent on the drilling and testing of the horizontal well.

Question: Was this effort cost-shared? If so, with whom?

Answer: The effort is not cost-shared.

Question: What will you get out of the program if you don't do the stimulation?

Answer: During the drilling phase, care will be taken to provide valuable data for reservoir and stimulation models. The state-of-the-technology for directional drilling the desired wellbores will be ascertained. Gas flow data from the directional well will be compared directly with that from adjacent vertically drilled and completed wells to determine the measures of increased production achieved by linking the natural fractures.

Question: How much would the stimulation cost?

Answer: The stimulation would cost approximately $500,000.

Question: Your budget terminates supporting research for the Western tight sands program. (p. 123) Why?

Answer: Supporting research efforts in fracture mechanics and diagnostics are due to be completed during FY 1986. Reservoir and stimulation modeling efforts were pre-funded and are due to be completed during the FY 1986-FY 1987 time frame. Some modeling verification will continue to be conducted at the Morgantown Energy Technology Center. Additional efforts are conditional upon industry willingness to cost share and support the work.

Question: Are there sufficient funds to continue the multi-well experiment?

Answer: The FY 1987 budget request of $3,200,000 for the multi-well experiemnt will allow for the scheduled stimulation and testing of a fluvial tight sand reservoir.

Question: When will it be complete?

Answer: All field efforts at the multi-well site will be completed by the end of FY 1987.

Question: Why are efforts at expanding the knowledge gained at the multiwell experiment to other major basins being terminated?

Answer: The Department believes that this type of research effort is appropriate for the private sector to undertake. If industry determines that there is a need for further technology development, additional funding for further research could be available through the Cooperative R&D Venture Pool.

Question: Will you have stimulated all of the gas bearing zones in the multiwell experiment when you terminate it in FY 1988 as planned? If not, how much would it cost to do so, by fiscal year?

Answer: There are several dozens of gas-bearing zones encountered by the wells at the multi-well facility. It was never DOE's intent to stimulate all gas-bearing zones. By careful analysis of data collected (core, geophysical logs, reservoir tests, thickness, etc.), DOE scheduled to stimulate four to six sand bodies that exhibited the best reservoir conditions and therefore the best potential for stimulation and subsequent increase in gas flow rates. The exact number is time-constrained. DOE is presently planning to terminate operations at the site by the end of FY 1987.

In order to complete all of the originally planned efforts at the multi-well site and all supporting evaluations and analyses would require $4.0 million in FY 1988, and $1.0 million in FY 1989.

Question: What date does the current lease expire?

Answer: The current lease expires during August, 1988.

Cooperative Ventures R&D

Question: How do you intend to find out what types of cooperative ventures in which industry might be interested?

Answer: The industrial interest in cooperative ventures will be determined by traditional mechanisms, including verbal dialogue (formal and informal), public meetings, inputs at the initiative of the private sector and eventually a free and open competition for project funding under this program.

Informal conversations with various industrial representatives have suggested, in at least preliminary fashion, that there would be private sector interest and favorable reception to the concept of cooperative ventures. Companies that have expressed some interest include a number in the oil and gas markets. In addition, GRI's testimony among others provided to the House Committee on Science and Technology expressed clear interest in the general venture concept and program.

Question: What advantages would such ventures have compared to normal cost-sharing contracts or cooperative agreements?

Answer: While there are similarities between the proposed ventures and cost-sharing contracts or cooperative agreements, the funding pool will be used to participate in industry-formed R&D cooperative ventures consistent with the Cooperative R&D Act of 1984. The Act was passed specifically to "promote research and development, encourage innovation, stimulate trade, and make necessary and appropriate modifications in the operation of the antitrust laws." The latter point in particular distinguishes the proposed venture program from other activities, it that it allows several interested parties, even from the gas industry, to pool their resources and their risks. By having the private sector propose the ventures and provide majority funding in the ventures, industry commitment, relevance, and technology transfer may all be enhanced. Partnership in such a venture may also provide alternate types of oversight and program reporting that will be conducive to enhanced industrial participation.

Question: Don't you already have the ability to enter into agreements with cooperative R&D ventures?

Answer: From a contracting viewpoint DOE does indeed already have the ability to enter into agreements with cooperative R&D ventures.

Question: Do you have any agreements with such ventures now?

Answer: At the present time, strictly speaking, DOE/Fossil Energy does not have agreements in place with cooperative R&D ventures as described or defined in the proposed FY 1987 budget. However, we are aware that, of the roughly 40 R&D ventures reported in 1985 under the National Cooperative Research Act of 1984, two areas are of potential fossil interest: a United Technologies/Toshiba (IFC) venture for commercializing fuel cells and a West Virginia University/Monsanto/DuPont/Standard Oil/Union Carbide venture for establishing an Industrial Cooperative Research Center.

Question: If you do, what is the difference between those agreements and what you contemplate?

Answer: As stated in the previous answer, we do not currently have any such relationships or agreements.

Question: Your justification (p. 138) says that one of the goals is "Reduction and/or elimination of those traditional barriers that limit the financial and technical cooperation between the private and public sectors (e.g., patent positions, proprietary rights, anti-trust concerns, etc.)".

How would these ventures do that?

Answer: The proposed venture program would utilize the features of the Cooperative R&D Act of 1984. The Act was passed to encourage and facilitate the formation of industrial teams by reducing traditional barriers to teaming arrangements, such as antitrust limitations.

Question: Why can't you do that in your normal contracting practice?

Answer: Contracting per se might not provide all of the benefits we need, although we could use it. The proposed program could be, in principal, implemented utilizing a number of existing funding mechanisms, including cooperative agreements, grants, and regular contracts.

Question: How likely are you to get ventures that cover and "strengthen a whole industry and not just one or a few selected players" as you state in your budget? (p. 128)

Answer: The likelihood of getting ventures that cover and strengthen a whole industry cannot be determined at this time, but it is an objective of the proposed program.

Question: In your current R&D programs, isn't technology that is developed subject to reasonable licensing procedures, so that "whole industries" can benefit?

Answer: Under current R&D programs there are no contractually imposed requirements for a company receiving patent waivers, for example, to then license the patented technology so that whole industries can benefit. The current contracting system also does not always provide the best incentives for the patent-owner to commercialize the work. We hope that well-structured cooperative ventures can provide good incentives.

Question: Don't you already require in many R&D agreements not only cost-sharing but sharing in profits and royalties?

Answer: Some former and current contracts had provisions similar to those being proposed in the cooperative R&D venture programs. Examples of projects or programs where we have obtained heavy cost-sharing include:

- The EDS liquefaction program involved fundamental research and modeling and applied research on suitable pilot scales and was originally planned to be cost shared on a 50% basis. Currently, it is estimated that the private sector cost sharing was actually in excess of 50% (i.e., about 53%). The projects involved Exxon, EPRI, Philips Petroleum, Atlantic Richfield, and other companies.
- The FY 1986 "optional" program in the current DOE cooperative agreement with the National Institute of Petroleum Research (NIPER) is anticipated to have an industrial contribution in excess of 60% focused on oil recovery research.
- The current DOE/New Mexico Institute of Mining and Technology project in EOR research has a 60% private sector contribution from several companies.
- The DOE methanol to gasoline (MTG) project with Germany involves applied research on a pilot scale with DOE contributing one third of the costs. The participating companies are Mobil from the U.S. and two German firms.

Question: What makes these proposed ventures better in that respect? How will you be certain that you are not displacing private funds?

Answer: The probable projects coming out of the proposed venture will share many of the features of the previously listed programs. The principle difference is that the proposed program represents a deliberate, focused effort, on identifying and subsequently selecting and supporting the most promising suite of projects possible. There can never be a guarantee that some private funds will not be displaced. The latter is also true with other programs and other contracting vehicles. However, we expect that profit motives and other business ambitions in these ventures will provide incentives for the business sector to contribute the maximum share they can afford, thus minimizing Federal displacement of private funds.

Question: How is that different than your knowledge in present contracts?

Answer: The major difference between the suite of projects expected under the Venture Pool concept and past contracts is that now industry will select the operating areas and areas of R&D development based on their concept of which technologies show the most commercial promise. The incentives will be to put the money where it will do the most good. The private sector profit motives will find their incentives in commercialization of emerging technologies rather than in continuing contract-research activities.

General

Question: Please provide for the record, by program, the funds that would be needed in FY 1987 to retain the existing personnel floors.

Answer: The following information represents the funds that would have to be added to the budget to retain the personnel floors:

Additional Costs Required to Retain Floors
($ in thousands)

Program	Congressional Floor	FY 1987 Budget Request	Delta	Cost to Retain Floors
Control Technology & Coal Preparation	55	45	-10	$ +453
AR&TD	32	15	-17	+754
Coal Liquefaction	72	51	-21	+949
Combustion Systems	24	20	-4	+114
Fuel Cells	0	0	0	0
Heat Engines	7	6	-1	+30
Underground Coal Gas.	0	0	0	0
MHD	0	0	0	0
Surface Coal Gas.	23	18	-5	+224
Advanced Process Tech.	0	0	0	0
Enhanced Oil Recovery	6	3	-3	+111
Oil Shale	13	12	-1	+50
Unconventional Gas Recovery	11	10	-1	+39
Program Direction	457	359	-98	+6,835
Total	700	539	-161	+9,559

Question: Please provide for the record a listing of actual FY 1985, estimated FY 1986 and budgeted FY 1987 expenses at each of the energy technology centers, project offices, and headquarters. Such listing should show as a minimum: personnel costs, materials costs, subcontracts for operations, and costs of upkeep for each center or office (such as utilities, rent, telephones, etc.)

Please also show how these costs are allocated to either program direction or research accounts in each year.

Answer: The following chart provides actual funding for FY 1985, estimated FY 1986 and FY 1987 expenses at each Energy Technology Center, Bartlesville Project Office and headquarters, by object class.

OBJECT CLASSIFICATION	HQ FY1985 ACTUALS			METC FY1985 ACTUALS			PETC FY1985 ACTUALS			BPO FY1985 ACTUALS		
	R&D	PG	TOTAL	R&D	PD	TOTAL	R&D	PD	TOTAL	R&D	PD	TOTAL
11 PERSONNEL COMPENSATION		7306	7306	2500	7006	9506	5482	4549	10031		610	610
12 PERSONNEL BENEFITS		757	757	294	839	1133	656	487	1143		166	166
13 BENEFITS FOR FORMER PERSONNEL		34	34	0	14	14	0	2	2		2	2
21 TRAVEL AND TRANS OF PERSONS		467	467	22	576	598	191	357	548		52	52
22 TRANSPORTATION OF THINGS		0	0	1	32	33	-15	10	-5		7	7
23 RENT, COMMUNICATION AND UTILITIES		0	0	1	659	660	12	154	166		0	0
24 PRINTING AND REPRODUCTION		0	0	204	2	206	218	12	230		0	0
25 OTHER CONTRACTUAL SERVICES		14	14	6692	8453	15145	5786	10515	16301	11174	1016	12190
26 MATERIAL AND SUPPLIES		0	0	710	456	1166	766	322	1088		4	4
31 EQUIPMENT		0	0				206	160	366			0
32 LAND AND STRUCTURES		0	0				0	5	5			0
	0	8578	8578	10424	18031	28455	13296	16573	29869	11174	1857	13031

DETAIL OF FOSSIL ENERGY
DIRECT AND INDIRECT COSTS
(DOLLARS IN THOUSANDS)

OBJECT CLASSIFICATION	HQ FY1986 ESTIMATE			METC FY1986 ESTIMATE			PETC FY1986 ESTIMATE			BPO FY1986 ESTIMATE		
	R&D	PD	TOTAL	R&D	PD	TOTAL	R&D	PD	TOTAL	R&D	PD	TOTAL
11 PERSONNEL COMPENSATION		7046	7046	2762	7450	10212	5202	5406	10608		679	679
12 PERSONNEL BENEFITS		835	835	329	882	1211	616	641	1257		81	81
13 BENEFITS FOR FORMER PERSONNEL		14	14	5	14	19	10	11	21		1	1
21 TRAVEL AND TRANS OF PERSONS		431	431	168	456	624	319	331	650		42	42
22 TRANSPORTATION OF THINGS		7	7	2	7	9	4	5	9		1	1
23 RENT, COMMUNICATION AND UTILITIES		219	219	85	232	317	162	168	330		21	21
24 PRINTING AND REPRODUCTION		116	116	47	123	170	86	89	175		11	11
25 OTHER CONTRACTUAL SERVICES		4123	4123	6742	10287	17029	5114	9471	14585		765	765
26 MATERIAL AND SUPPLIES		589	589	231	623	854	435	452	887		57	57
31 EQUIPMENT		0	0	76	139	215	371	295	666		13	13
32 LAND AND STRUCTURES		0	0	0	0	0	0	0	0		0	0
	0	13380	13380	10446	20214	30660	12319	16869	29188		1671	1671

OBJECT CLASSIFICATION	HQ FY1987 ESTIMATE			METC FY1987 ESTIMATE			PETC FY1987 ESTIMATE			BPO FY1987 ESTIMATE		
	R&D	PD	TOTAL	R&D	PD	TOTAL	DIRECT	R&D	PD	R&D	PD	TOTAL
11 PERSONNEL COMPENSATION		6059	6059	2384	6073	8457	3948	5083	9031			
12 PERSONNEL BENEFITS		718	718	283	720	1003	468	603	1071			
13 BENEFITS FOR FORMER PERSONNEL		12	12	4	12	16	8	10	18			
21 TRAVEL AND TRANS OF PERSONS		371	371	146	372	518	242	311	553			
22 TRANSPORTATION OF THINGS		6	6	1	6	7	3	5	8			
23 RENT, COMMUNICATION AND UTILITIES		188	188	74	189	263	124	158	282			
24 PRINTING AND REPRODUCTION		100	100	39	100	139	65	84	149			
25 OTHER CONTRACTUAL SERVICES		3300	3300	8390	7827	16217	6804	6254	13058			
26 MATERIAL AND SUPPLIES		506	506	201	508	709	330	425	755			
31 EQUIPMENT		0	0	0	0	0	0	0	0			
32 LAND AND STRUCTURES		0	0	0	0	0	0	0	0			
		11260	11260	11522	15807	27329	11992	12933	24925	0	0	0

Question: For anticipated reductions in areas other than personnel, please explain the basis.

Answer: In FY 1987, no funding was requested for capital equipment and general plant projects. In addition, no funding was requested for the Bartlesville Project Office in anticipation of defederalization.

The remainder of reductions in other object class items for management and program direction from FY 1986 to FY 1987 generally reflect a percentage reduction of funds in conjunction with the overall reduction of the Fossil Energy budget in FY 1987. No reductions are anticipated for the direct R&D activites other than in the personnel area.

Question: Please update amounts of in-house R&D funds at PETC and METC for FY 1985, FY 1986, and FY 1987. For 1986 and 1987 please show amounts by subprogram.

Answer: The amounts of in-house R&D funds at PETC and METC for FY 1985, FY 1986 and FY 1987 are reflected in the chart below.

Budget Authority
($ in thousands)

	FY 1985	FY 1986	FY 1987
In-house R&D funds:			
METC	9,796	10,446	11,522
PETC	13,214	12,319	11,992

The amounts by major activity for FY 1986 and FY 1987 are reflected in the following chart.

IN-HOUSE R&D FUNDS
Budget Authority
($ in thousands)

	FY 1986		FY 1987	
	METC	PETC	METC	PETC
Coal Tech. & Coal Prep.	1,418	4,600	2,056	4,484
Advanced Research & Tech.	1,835	1,006	1,716	1,150
Coal Liquefaction	0	4,367	0	4,145
Combustion Systems	1,187	2,003	1,076	2,213
Fuel Cells	0	0	0	0
Heat Engines	911	0	842	0
Underground Coal Gasification	0	0	0	0
Magnetohydrodynamics	0	200	0	0
Surface Coal Gasification	2,791	143	2,477	0
Unconventional Gas Recovery	1,462	0	1,402	0
Advanced Process Technology	0	0	0	0
Enhanced Oil Recovery	842	0	309	0
Oil Shale	0	0	1,644	0
Total In-House R&D	10,446	12,319	11,522	11,992

Question: For each of the defederalized ETC's (Western Research Institute, NIPER, and UNDERC) please provide estimated funding, by subprogram area for FY 1985, FY 1986, and FY 1987.

Answer: Estimated funding for the defederalized ETC's follows, however, there are no specific funds designated in the FY 1987 budget request for WRI and UNDERC.

	NIPER ($000)			UNDERC ($000)			WRI ($000)		
	FY85	FY86	FY87	FY85	FY86	FY87	FY85	FY86	FY87
CTCP									
Flue Gas Cleanup				360	439				
Gas Stream Cleanup				300					
Waste Management				290	343				
Coal Preparation				450	97				
AR&TD									
Direct Utilization				1000	813				
Environmental					100				
LIQUEFACTION									
Advanced Research	410	502	500	500	382				
Advanced Process Development				900	659				
COMBUSTION									
AFB Combustion				400	258				
PFB Combustion				400	382				
Alternative Fuels				600	614				
HEAT ENGINES					333				
UNDERGROUND COAL GASIFICATION									
Environmental & Advanced Research								1584	
Gasif. Tech. Development							1881	1243	
SURFACE COAL GASIFICATION									
Advanced Research				300	239				
Advanced Process Development					421				
Systems Engineering Concepts					286				
Environmental Studies				1100	526				

	NIPER ($000)			UNDERC ($000)			WRI ($000)		
	FY85	FY86	FY87	FY85	FY86	FY87	FY85	FY86	FY87
UNCONVENTIONAL GAS RECOVERY									
Western Tight Gas Sands	282								
ADVANCED PROCESS TECHNOLOGY									
Advanced Exploratory Research	2443	3210	1500				500	320	
ENHANCED OIL RECOVERY									
Heavy Oil	398	771	583						
Light Oil	4218	5441	3417						
Tar Sands							654	1108	
OIL SHALE									
Environmental Mitigation Research							2132	2629	
Technology Base							1321	2578	
TOTAL	7751	9924	6000	6600	5892	0	6488	9462	0

Question: If funds were provided in FY 1987 at the levels in the Senate report from FY 1986 (Senate Report 99-141) for WRI and UNDERC, and at the levels of the cooperative agreement for NIPER, in what subprogram areas would the funds be used?

Answer: We are currently trying to identify FY 1987 subprogram funding for two of the cooperative agreements i.e., WRI and UNDERC. Once we identify the funds for FY 1987 at the targeted levels in the Senate Report (99-141), this information will be provided. For NIPER, funds will be taken from the following subprograms to meet the FY 1987 target of $6.0 million:

PROGRAM	FY 1987 - NIPER ($ in Thousands)
LIQUEFACTION	
PR/Liquefaction	500
ADVANCED PROCESS TECH	
Advanced Exploratory Research	1,500
ENHANCED OIL RECOVERY	
Heavy Oil	583
Light Oil	3,417
TOTAL	$6,000

Question: For each of the defederalized ETC's please provide an update of the support being received from non-DOE sources. To the extent possible indicate in what fiscal year the funds will be expended.

Answer: Updated lists of support being received by NIPER, UNDERC and WRI from non-DOE sources are being provided for the Committee files. Please note that this data is business confidential.

Question: Your budget requests no funds for General Plant Projects in FY 1987. What projects are being funded in FY 1986?

Answer:

($ in thousands)

	FY 1986 B/A
Morgantown Energy Technology Center	
Warehouse Addition, Phase II	650
East Perimeter Fence, Phase II, 3,600 linear ft.	380
Replace Asbestos-Covered Piping, B-4 and B-5	148
Subtotal	1,178
Pittsburgh Energy Technology Center	
Construct Offices, Storage, Conference Rooms in Reclaimed PETC Bldg. 921, Phase II	650
Construct Extension to PETC Fire Alarm Notification System (various buildings)	67
Construct a Fibre Optic Data Cabling System Between ADP Facilities and Administration Building	100
Repair by Replacement Roofs on Various Buildings	150
Construct a Gas Cylinder Storage Facility	130
Construct an Enclosed Fire Stairwell in Bldg. 58	80
Subtotal	1,177
Bartlesville Project Office	
Headquarters has Reserved $500,000 Pending a Review of GPP Requirements of NIPER (BPO Contractor)	500
Subtotal	500
GRAND TOTAL	2,855

Question: Are there any health and safety projects that are backlogged at the ETC's? If so, please provide a list for the record.

Answer: The following is a representative list of those projects at each ETC that could be done, but were not of sufficient priority to be included in the budget request considering funding levels.

MORGANTOWN ENERGY TECHNOLOGY CENTER

Stack Scrubbers/Filters
Replace Asbestos-Covered Piping, B-4 and B-5 (Balance)
Coal Dust Collection, System B-14
Sewer Line Tie-In to City of Morgantown
Construct Shower Room/Change Facility

PITTSBURGH ENERGY TECHNOLOGY CENTER

Construct Extension to PETC Fire Alarm System
Safety Upgrade Norwalk Compressor Room
Construct Oil Containment Dike
Replace 5 PCB Contaminated Power Transformers
Coal Drum Storage Facility
OSHA Upgrade of Chemistry Labs

Question: Please provide for the record a breakdown of the $4,082,000 in generic overhead expenses included in the FY 1987 and provide the FY 1985, and FY 1986 expenses also.

Answer: FOSSIL ENERGY R&D GENERAL SUPPORT

Program	FY 1985 Assessment B/A	FY 1986 Program Direction B/A	FY 1987 Program Direction B/A
Printing	$ 401,801	$ 500,000	$ 700,000
Small/Disadvantaged Business Set Aside	0	265,000	300,000
Historically Black Colleges	828,000	900,000	600,000
Transportation Related Studies	250,000	0	0
Small Business Innovative Research Program	2,300,000	2,500,000	1,000,000
ASFE Reserve[1/]	1,498,199	833,000	1,482,000
TOTAL	5,278,000[2/]	4,998,000	4,082,000

[1/] Includes such items as computer services (timesharing), computer hardware, support services, conference fees, quality assurance support, and miscellaneous items. The amounts used for these items varies by year in accordance with requirements.

[2/] The Congressionally approved FY 1985 assessment of $5,380,000 was reduced by $102,000 for printing costs in accordance with Section 2901 (P.L. 98-369).

QUESTIONS SUBMITTED BY CONGRESSMAN RALPH REGULA

Clean Coal

Question: In light of the Drew Lewis Acid Rain report, which recommended a $5 billion, cost-shared demonstration program, do you believe we should consider additional money for the Clean Coal program?

Answer: The Administration and Congress have already provided substantial support for clean coal technologies — a total of almost $2.2 billion has been allocated in the U.S. from fiscal year 1981 through fiscal year 1985 to develop technologies for cleaner use of coal. However, as the President's principal deputy press secretary stated on March 19, 1986, more needs to be done. In fully endorsing the Special Envoys' recommendations, the President has indicated his intention to seek to provide in the future the funding recommended in the Joint Report and to encourage States to undertake similar efforts, as several have already done.

General

Question: From reading your budget it would appear that you are consistently proposing to maintain DOE research effort at the expense of industry and university work. At the same time your justification for initiating the Cooperative Venture Program is to get early industry involvement to guide your research and to facilitate technology transfer. How do you reconcile these two seeming inconsistencies?

Answer: The proposed Fossil Energy programs for FY 1987 encompass a balanced portfolio of activities that include both technology base activities (principally, as you have observed, research at the DOE energy technology centers) and cooperative ventures. The cooperative venture funding pool will be used to participate in industry-formed R&D cooperative ventures (which would not preclude university participation), consistent with the Cooperative R&D Act of 1984.

Question: Other than the cooperative venture initiative, why do you generally consider the DOE portion of your research more important than the industry and university initiatives?

Answer: Fossil Energy maintains a balanced program of research executed through national laboratory, university, industrial and in-house Energy Technology Center (ETC) research personnel. The ETC in-house research programs involve basic, long-term, high-risk research that is not generally financially supported by the private sector. This basic research performed by the ETC's forms a technical base that is drawn on and enhanced by national laboratory, industrial and university research programs.

Question: Doesn't this also have the effect of further cutting fossil research because you loose the cost share dollars from the private sector?

Answer: It should be noted that aside from the cooperative venture initiative, approximately 31 percent of Fossil Energy active contracts are cost-shared, and that on an average, the cash and in-kind contributions by the industrial partners average approximately 36 percent of the total value of each contract.

Question: For the record could you provide an analysis of the private sector dollars that could be lost as a result of this budget proposal assuming none of the research goes ahead without DOE's support.

Answer: In light of the long-term, high-risk nature of the research being conducted at the ETC's, that precludes significant industrial interest in cost-shared arrangements, and noting that only about one-third of all active Fossil Energy contracts are cost-shared contracts, little, if any, loss would be expected to result from this budget proposal to do basic research with in-house ETC personnel. The Department does, however, fully support and will continue to encourage maximum cost-shared participation by the private sector in all appropriate R&D contracts.

Question: Looking at your overall budget (pg. 17) I notice that in FY 1985 when you managed a program of $349.4 million headquarters program direction was $8.3 million. In your proposed FY 1987 budget of $150.1 million you are seeking headquarters program direction of $11.3 million. Why do you need $3 million more to manage a program that is less than half the size of the FY 1985 program?

Answer: The FY 1985 appropriated amount of $8.3 million for Program Direction supported the FTE floor level of 135 FTE's at headquarters. In FY 1987, the program direction line includes $7.2 million for salaries, benefits, and travel for 109 FTE's at headquarters and assumes enactment of legislation to repeal legislative employment requirements.

In addition, however, the FY 1987 program direction line now also includes $4.082 million for overhead expenses generic to the entire Fossil Energy program which were financed in previous years (FY 1985 and prior) by program assessments. These expenses include printing at the Technical Information Center at Oak Ridge, Tennessee, Historically Black Colleges, Small Business Innovative Research, general management support, conferences, etc.

Question: Your budget justification (pg. 21) mentions DOE's role in commercialization. What commercialization has DOE been involved in recent years?

Answer: The reference to commercialization on page 21 of the Fossil Energy budget justification is in a paragraph that describes the stages of the technology development path. This material was included to help the reader better understand where on the technology path there might be a potential government role. The text on page 21 goes on to say that the best payoff for government-sponsored R&D is in the earlier stages (i.e., basic research through proof-of-concept), whereas R&D in the latter stages (including commercialization) should be the responsibility of the private sector. Accordingly, the Fossil Energy R&D budget has not supported commercialization oriented activities in recent years.

Question: Your budget (pg. 21) says that one of the goals of the fossil program is to promote a balanced and diversified energy resource system. How do you believe your budget addresses this goal?

Answer: Balance and diversification have a number of dimensions. For example, an R&D program with these characteristics should consider the relevant supply (i.e., coal/solid, liquid and gaseous fuel forms), utilization (e.g., combustors, control technologies) and conversion (e.g., coal to liquids and gases) options, while ensuring that adequate attention is given to environmental concerns and the fundamental research program that must underlie successful applied research activities. All of these dimensions were considered carefully in the development of the FY 1987 Fossil Energy budget request.

Liquefied Gaseous Fuels Spill Test Facility

Question: Your budget (pg. 23) mentions fossil energy's role in the management of the Liquefied Gaseous Fuels Spill Test Facility program to address safety issues associated with large spills. Does this deal at all with offshore spills? Could you elaborate on this function?

Answer: The overall goal of the Liquefied Gaseous Fuels Spill Test Facility program is to design and construct a unique facility for conducting spill tests in support of safety research associated with the handling, shipping and storage of liquefied gaseous fuels and other hazardous fluids. It does not deal with offshore spills of oil, however it could pertain to offshore spills during transport of liquefied natural gas or other commodities such as ammonia.

Current objectives of the program are not directly related to water spills; however, the Frenchman Flat area, where the facility is located, has the capability to be flooded so that hazardous spills could be tested on water. Field tests of Rapid Phase Transition (RPT) explosions between LNG and water are desired by those concerned with the marine transport of LNG. Additional theoretical and laboratory work is needed to determine the specific requirements for field tests. The objective of RPT test could be to determine the conditions causing RPTs and the amount of energy released as a function of spill size.

Modification to the basic configuration would be required to accommodate those tests of LGF's, such as pool fires (on water) and rapid phase transitions, which require the discharge of test fluids on water. This modification would require temporary extension of the spill pipe(s) on temporary supports to a point a safe distance away from the design basis spill point to provide the water surface. This could be accomplished since the surface of Frenchman Flat is mostly clay and nearly impervious to water and water will be available at the tank farm.

Coal Preparation

Question: What is the status of Gravimelt and what do you intend to do in FY 1987?

Answer: At the present time TRW is under contract to fabricate and test Gravimelt subsystems at the 20 lb/hr scale. The reactor (rotary kiln) and the regeneration subsystems are in shakedown now with testing scheduled to continue through September 1986. The next planned development step (pending a favorable economic assessment to be completed in August 1986) is an integrated system test which will allow for continuous and steady state operation at the nominal 20 lb/hr scale. The plans for 1987 are to design and begin construction (many existing components will be used) of the integrated system test.

Question: Does this appear to be a promising technology for chemical coal cleaning?

Answer: The technology continues to meet program objectives and is considered promising for producing an ultra-clean coal.

Question: Is this technology nearing proof-of-concept?

Answer: The planned integrated system test discussed above is considered necessary before any further scale-up of the technology.

Question: Has the State of Ohio contributed anything to this project?

Answer: To our knowledge, the State of Ohio has not contributed to this project.

Flue Gas Cleanup

Question: According to your budget (pg. 30) in FY 1986 you continued proof-of-concept test and evaluation of candidate acid rain control technology processes. What technologies in this area are you evaluating?

Answer: Three projects are underway. Dravo Corporation was awarded a contract for a process involving the pnuematic injection of dry hydrated lime into a humidified duct upstream of the particulate control system. The other two projects involve the injection of lime slurry into the duct. Bechtel is developing a process using a dual fluid nozzle to inject a pressure hydrated dolomitic lime slurry. General Electric will use a rotary atomizer to inject a conventional lime slurry. This latter project also contains an optional task or electrostatic augumentation and dispersion.

Question: Will this work continue in FY 1987?

Answer: Work on these projects will continue in FY 1987.

Question: What will be the impact of your proposed reductions on the Department's work on acid rain?

Answer: The FY 1987 budget for this program area has not been affected by the Department's proposed overall reductions. Proposed funding for this project area in FY 1987 is $3,390,000 as opposed to $1,797,000 for FY 1986.

Question: For the record provide a breakdown of DOE acid rain related work in FY 1986 and FY 1987.

Answer: The following chart shows Fossil Energy's acid rain related research for FY 1986 and FY 1987:

($ in thousands)

	FY 1986 Adjusted B/A	FY 1986 Less Deferral	FY 1987 Request B/A
CTCP			
Flue Gas Cleanup	10,952	10,318	7,541
Gas Stream Cleanup	7,105	5,486	3,839
Waste Management	1,177	1,177	324
Coal Preparation	12,716	10,077	6,443
Subtotal	31,950	27,058	18,147
AR&TD			
Direct Util.	11,262	10,555	9,415
Environ. Act.:			
Acid Rain TF	700	700	750
Subtotal	11,962	11,255	10,165
Comb. Systems			
AFB Combustion	2,238	2,227	1,590
AFB/TVA	14,334	14,334	N/A
PFB Combustion	5,061	4,851	3,686
Adv. Comb. Tech.	3,409	2,454	1,882
Alt. Fuels Util.	4,071	4,071	2,011
Subtotal	29,113	27,937	9,169
Heat Engines	12,314	10,764	7,942
Total Acid Rain	85,339	77,014	45,423
Clean Coal Tech.	99,400	99,400	149,100

Advanced Research and Technology Development

Question: Your budget says that DOE was involved in FY 1986 in providing seed funding for new initiatives and identified advanced research needs in support of international activities. Could you elaborate on that?

Answer: Examples of seed funding for new programs include the following two funded in FY 1986:

- The biological removal of organic sulfur and metals from coal, initiated at the Idaho National Engineering Research Laboratory. This work differs from other studies investigating the application of biological techniques to coal processing in that it seeks to determine the fundamental mechanisms involved in using microorganisms to degrade the organic compounds in coal. Ultimately, this should provide insights which should enable us to engineer new organisms custom designed to perform specific functions such as coal desulfurization, or gasification, or liquefaction, at rapid rates and at moderate temperatures.

- A new study of catalyst formulation using computer-aided design techniques at the Sandia National Laboratory/Albuquerque. This study is unique in trying to use sophisticated interactive computer graphics techniques developed for manufacturing operations to help select catalyst supports and structures based on the shape of molecules that need to be allowed to enter or should be excluded from the catalyst support's pore structure.

In response to the identification of advanced research needs in support of international activities, FE is currently planning eight new international agreements. These planned agreements are based on analyses performed for FE AR&TD staff and collaborative planning with representatives of countries with similar research interests. All planned agreements are task-shared and, therefore, require no transfer of funds to our international partners.

Question: According to your budget the requested funding for environmental activities will ensure that "most" environment, safety and health compliance activities will be continued. What will not be done because of the budget cuts?

Answer: The Office of Fossil Energy, in cooperation with the Office of Environment, Safety and Health, will accomplish all necessary compliance activities.

Question: Your budget in this area says that FY 1987 activities will be similar to those carried on in FY 1986 with some change in emphasis. What are those changes?

Answer: For FY 1987, it is anticipated that in the area of air quality analysis, emphasis will be placed upon toxic air pollutants and the impact of multiple pollutants (O_3, heavy metals, etc.) as opposed to traditional pollutants (SO_x, NO_x) having an individual impact. In addition, hazardous waste issues are expected to be highlighted with less emphasis on water quality issues.

Question: Your budget says that "It is expected that a number of important strategic planning issues requiring further analysis will be identified as a result of FY 1986 energy sector analysis efforts associated with the Interagency Task Force on Acid Precipitation and other major ongoing energy deliberations." Does your budget include sufficient funds to perform these analyses?

Answer: At the present time, we believe that existing funds will be sufficient to support the strategic planning issues resulting from the energy sector analysis efforts associated with the Interagency Task Force on Acid Precipitation and other major energy deliberations.

Question: Could you list for the record the bilateral/multinational agreements in which the Fossil Energy Program is involved?

Answer: The requested list follows:

FE ACTIVE INTERNATIONAL AGREEMENTS - JANUARY 1986

Type of Agreement	Title	Country Participants		Duration	Funding Level
BILATERAL (General Agreement)	Development of Technology Utilizing the Site of the Triunfo Coal Deposits in Rio Grande Do Sul	Brazil	U.S.	5/26/84-Indef.	N/A
BILATERAL (Implementing Agreement) Cost-shared)	Exchange of Technical Information and Cooperation in the Field of UCG	Brazil	U.S.	1/21/85-1/21/90	Funded by Trade Development Program of Dept/State FY85 -- FY86 $700,000
BILATERAL (General Agreement)	Tar Sands and Heavy Crude Oil	Canada	U.S.	6/4/79-12/4/89	N/A
BILATERAL (Implementing Agreement) Task-shared	Resource Characterization of Tar Sands	Canada	U.S.	6/4/79-12/4/89	N/A
BILATERAL (Implementing Agreement, Task-shared)	Steamflooding with Additives, Tar Sands	Canada	U.S.	9/13/82-12/4/89	N/A

Type of Agreement	Title	Country Participants		Duration	Funding Level
BILATERAL (Implementing) Agreement Task-Shared)	Dissemination of Information	Canada	U.S.	9/12/82-12/4/89	N/A
BILATERAL (Implementing Agreement Task-Shared)	Monitoring Frontal Movements in Thermal Recovery	Canada	U.S.	1/82-12/31/87	N/A
BILATERAL (Implementing Agreement Cost-shared)	Conversion of Methanol to Gasoline/Olefins	FRG	U.S.	3/20/80-3/20/86	Total FE funding of $10.5M appropriated by FY 1984
BILATERAL (General Agreement)	Cooperation in Energy Research and Development	Finland	U.S.	11/6/80-11/6/90	N/A
BILATERAL (PASA Agreement)	Implementation of Alternative Energy Resources and Development Project in Coal and Biomass Conversion in India	India	U.S.	3/25/83-6/30/86	Funded by U.S.A.I.D.
BILATERAL (General Agreement)	Cooperation in Energy Research and Development	Israel	U.S.	6/3/84-6/3/89	Three continuing projects in Oil Shale R&D. FY 1987 funding approximately $100,000

Type of Agreement	Title	Country Participants		Duration	Funding Level
BILATERAL (Implementing Agreement Task-shared)	Exchange of Information and Personnel	Israel	U.S.	6/3/84-6/3/89	N/A
BILATERAL (Implementing Agreement Cost-shared)	Supercritical Extraction Depolymerization of Israeli Oil Shales	Israel	U.S.	10/1/84-10/1/87	FY85 $50,000 FY86 $50,000
BILATERAL (Implementing Agreement Cost-Shared)	Theoretical Aids to Improve Blasting Efficiences in Oil Shale	Israel	U.S.	10/1/84-10/1/87	FY85 $70,000 FY86 $76,000
BILATERAL (Implementing Agreement Cost-shared)	Fate of Organic Sulfur in U.S. and Israeli Oil Shale	Israel	U.S.	10/1/84-10/1/87	FY85 $100,000 FY86 $100,000
BILATERAL (Implementing Agreement Cost-Shared)	Production of Alternative Fuels by Low-Temperature Low-Pressure Coal Conversion	Israel	U.S.	10/1/84-10/1/87	Total Funding appropriated in FY 84 of $150,000
BILATERAL (General Agreement)	Cooperation in Fossil Fuels Research and Development	Italy	U.S.	1/25/85-12/5/90	N/A

Type of Agreement	Title	Country Participants		Duration	Funding Level
BILATERAL (General Agreement)	Cooperation in R&D in Energy and Related Fields	Japan	U.S.	5/2/79-5/2/89	N/A
BILATERAL (General Agreement)	Cooperative Laboratory Relationship	Korea	U.S.	11/6/81-11/6/86	N/A
BILATERAL (General Agreement)	Cooperation in Petroleum Research and Development	Mexico	U.S.	6/20/83-6/20/88	N/A
BILATERAL (Implementing Agreement, Task-shared)	Numerical Fluid Dynamics and Complex Mass and Heat Transport	Mexico	U.S.	6/30/83-9/30/86	N/A
BILATERAL (Implementing Agreement, Task-shared)	Chemical Process Modeling	Mexico	U.S.	6/20/83-9/30/86	N/A
BILATERAL (General Agreement)	Cooperation in the Field of Fossil Energy Research and Development	PRC	U.S.	6/16/85-4/16/90	N/A
BILATERAL (General Agreement)	Collaboration in Energy Research and Development	U.K.	U.S.	10/18/84-10/18/89	N/A

Type of Agreement	Title	Country Participants	Duration	Funding Level
BILATERAL (General Agreement)	Energy R&D	Venezuela U.S.	3/6/80-3/6/90	N/A
BILATERAL (Implementing Agreement Task-shared)	Joint Characterization of Heavy Crude Oil	Venezuela U.S.	7/10/80-3/6/88	N/A
BILATERAL (Implementing Agreement Task-shared)	Cooperation in Supporting Research	Venezuela U.S.	7/10/80-8/6/88	N/A
BILATERAL (Implementing Agreement Task-Shared)	Evaluate Past and Ongoing EOR Projects	Venezuela U.S.	7/10/80-3/6/90	N/A
BILATERAL (Implementing Agreement Task-shared)	EOR Thermal Process	Venezuela U.S.	9/29/80-9/30/86	N/A
BILATERAL (Implementing Agreement Task-shared)	Coal Preparation, Combustion, and Related Analytic Technology	Venezuela U.S.	2/5/82-3/6/88	N/A

Type of Agreement	Title	Country Participants	Duration	Funding Level
BILATERAL (Implementing Agreement Cost-shared)	Subsidence Due to Fluid Withdrawal	Venezuela U.S.	7/17/83-12/3/86	Fully funded by Venezuela
BILATERAL (Implementing Agreement Cost-shared)	On-Site Training of Petroleum Engineers	Venezuela U.S.	3/14/84-3/6/88	Fully funded by Venezuela

Type of Agreement	Title	Country Participants	Duration	Funding Level
MULTILATERAL (Implementing Agreement Cost-shared)	Coal Research Service	Australia Austria Belgium Canada Denmark Germany Ireland Japan Netherlands New Zealand Spain Sweden U.K. U.S.	1975-Indef.	FY85 $685,000 FY86 $722,400 FY87 $770,000
MULTILATERAL (General Agreement)	Coal/Oil and Other Coal/Liquid Mixtures	Canada Italy Japan Netherlands Spain Sweden U.K. U.S.	3/23/81-Indef.	N/A
MULTILATERAL (Implementing Agreement Task-shared)	Coal/Liquid Mixtures Exchange of Base Technology Information	Canada Italy Japan Netherlands Spain Sweden U.S.	12/1/82-12/31/88	N/A
MULTILATERAL (Implementing Agreement Task-shared)	Enhanced Oil Recovery	Australia Austria Canada Denmark Egypt Germany Japan Norway U.K. U.S.	5/22/79-Indef.	N/A
MULTILATERAL (General Agreement)	Coal Combustion Science	Australia Canada Denmark Netherlands U.S.	3/27/85-3/27/88	N/A

Coal Liquefaction

Question: How can you justify this cut in coal liquefaction when your own budget (pg. 52) says "Research and development leading to innovative improvements in the present state-of-the-art will be necessary to improve the market potential of these technologies. With high uncertainty in supplies and prices in upcoming decades in the international petroleum market, the private sector will not undertake the long range, high risk R&D required to develop these improvements."

Answer: The Department believes that the Coal Liquefaction program is an integral part of the over-all Fossil Energy effort and that a viable, balanced technology based Research and Development program has been proposed for FY 1987. The $9,147,000 requested for FY 1987 provides for technology base research conducted by ETC's, universities, national labs and selected industrial partners. In addition, funding could be available to develop liquefaction technologies through the Clean Coal Technology Program.

Question: What cost shared industrial research projects in indirect liquefaction would be continued under your proposed budget?

Answer: All industrial research projects are cost shared in FY 1986. With the exception of the Liquid Phase Methanol project (LaPorte, Texas) all of these industrial projects will be continued in FY 1987, or completed as scheduled. Proposals currently are being evaluated for possible funding with FY 1986 funds, as part of a competitive procurement. It is possible that one or more cost shared industrial contracts will be initiated this year and continued in FY 1987. These ongoing projects are bench scale laboratory efforts investigating new homogeneous catalysts, micelle catalysts, iron based catalysts, cobalt catalysts, carbon supported catalysts and wax upgrading techniques.

Question: Your budget (pg. 56) mentions the efforts of the Japanese in direct liquefaction. Are the Japanese moving ahead of us in this area?

Answer: The Japanese are continuing to move ahead on selected scale up projects in coal liquefaction but so far there is no evidence they are moving beyond the technology with which we are familiar. Japan has participated in previous large scale U.S. projects and now are carrying out their own.

Question: According to your budget (pg. 56) in FY 1986 you initiated a cost shared R&D project with Italy in the liquefaction area. What was the U.S. share and what was Italy's share?

Answer: The cost shared R&D project with Italy is a three year project with a total cost of $757,000. The U.S. share is $289,000 (38 percent) and the Italian share is $468,000 (62 percent). The project is to be conducted in Italy, and the costs given are based on the current exchange rate of 1,500 Lira per U.S. dollar.

Combustion Systems

Question: According to your budget (pg. 62) the Pressurized Fluidized Bed Combustion technology should be commercial by the early 1990s. Will your FY 1987 budget propósal push that date back?

Answer: The FY 1987 budget request for the Pressurized Fluidized Bed Combustion program will concentrate on those remaining key technical issues which must be resolved so that the technology would be commercialized by the early 1990's. It is noted that activities in FY 1987 would address those technical concerns which have been under research and development for several years. Therefore the FY 1987 budget request will not result in any delay for meeting this commercialization date.

Question: According to the budget (pg. 63) PFB work is cost-shared by the British National Coal Board, EPRI and U.S. industry. Provide for the record the levels of cost share.

Answer: The operation and maintenance of the Grimethope PFB test facility would be funded by the British National Coal Board (NCB) and cost approximately $26 million. The U.S. Department of Energy has negotiated with the NCB to purchase operating time for specific tests and as such are not contributing to the overall test program. The estimated cost for the U.S. funded incremental test program would be $5 million. Separate contracts would be negotiated between the National Coal Board and EPRI and U.S. industry. The EPRI contract to test advanced hot gas cleanup devices in an EPRI-sponsored slipstream rig is estimated to cost $5 million. It should be noted that the DOE test program planned for Grimethorpe would be too costly without the National Coal Board's responsibility for funding their base program.

Fuel Cells

Question: Is DOD doing anything in the fuel cell area?

Answer: The Air Force has a terrestrial fuel cell program. Funding for FY 1986 is $1,735,000. Four project activities are underway.

1. Phosphoric acid fuel cells -- power plant development for remote sites ($1,500,000 for FY 1986).
2. Field test of a 40 kW power plant in Alaska ($40,000 for FY 1986).
3. Evaluation of future fuel cell power system sites and assessment of system life cycle costs ($150,000 for FY 1986).
4. Develop, test and evaluate fuel processing systems that operate on Air Force fuels ($45,000 in FY 1986).

A previous (FY 1985 and before) Army program for the development of small (approximately 1-5 kW) portable fuel cell power plants has been terminated.

Question: For the record provide a history of the cost sharing in fuel cells.

Answer: There are two categories of cost sharing, or more accurately cofunding, in the fuel cells program. First, funding by organizations involved in fuel cell technology development (DOE, the Electric Power Research Institute (EPRI) and the Gas Research Institute (GRI)). Second, funding by fuel cell developers and potential users such as the electric and gas utilities. The following chart displays the fuel cell funding:

($ in millions)

	Solid Oxide Fuel Cells	Molten Carbonate Fuel Cells	Phosphoric Acid Fuel Cells
DOE	$ 27.0	$ 74.0	$200.0
EPRI	0	27.0	35.0
GRI	0	0	65.0
Subtotal	27.0	101.0	300.0
IFC/UTC	0	0	165.0
Westinghouse	2.0	0	20.0
Englehard	0	0	7.0
Elect. Util.	0	0	49.0
Gas Util.	0	0	59.0
TOTAL	$ 29.0	$101.0	$600.0

Based on private conversations with EPRI, GRI and the fuel cells developers, it is estimated that additional contributions of approximately 10 percent of the total private sector funding are unreported. These funds are generally spent on proprietary efforts.

Question: Your budget assumes the private sector will commercialize phosphoric acid fuel cells and play a larger role in the molten carbonate work and solid oxide. Will the industry take over all this work or will it not be done?

Answer: The Department considers that the commercialization of phosphoric acid fuel cells is of sufficiently low risk that the private sector will complete its on-going efforts in this regard even though Federal support is concluded at the end of FY 1986.

Presently, three U.S. companies are developing phosphoric acid fuel cell power plants and each of the companies is presently engaged in negotiations with potential customers (gas utilities, electric utilities and industrial firms) for the future delivery of power plants. These negotiations and associated marketing plans provide a basis for the conclusion that phosphoric acid fuel cell power plants will be commercialized within the next five years. Additional DOE support beyond FY 1986 will only support product improvement.

Also, in Japan several fuel cell developers and utilities have plans to commercialize both on-site and electric utility phosphoric acid fuel cell power plants on or before 1990. This is significant since the Japanese fuel cell developing companies are utilizing U.S. acquired technology and are presently slightly behind the U.S. companies in terms of technical maturity.

In molten carbonate and solid oxide fuel cell systems the Department will continue to fund development activities, although at reduced funding levels. These fuel cell systems are at a technology status where modest funding levels are appropriate to address fundamental technological problems in small scale cells and stacks. The reduced funding is not expected to adversely impact or delay the long range development of these systems.

Question: What is the status of your work on corrosion resistant materials for molten carbonate fuel cells?

Answer: At the current state of development, corrosion of cell materials is projected to be life limiting at 20,000 to 40,000 hours of operation. Goals for stack life for competitive power plants are 25,000 to 50,000 hours. Both International Fuel Cells Corporation (IFC) and Energy Research Corporation (ERC) are addressing corrosion concerns in their technology development contracts. The planned competitive procurement for stack development would continue this work with internal and/or external reforming stack concepts. A competitive procurement is also planned for "component materials research" in FY 1986 with an anticipated period of performance of July 1986 to July 1988. Corrosion of molten carbonate fuel cell (MCFC) materials is one topic which is to be addressed by this research.

Question: Would this have applications to other fuel cells?

Answer: The results of this materials corrosion research is expected to be applicable to the various MCFC technologies and could conceivably spin-off to the cell and interconnection materials in solid oxide fuel cells, although the cell environments are very different.

Question: Will this work continue in FY 1987?

Answer: As stated previously, a competitive procurement PRDA is also planned for "component materials research" in FY 1986 with an anticipated period of performance of July 1986 to July 1988. Corrosion of MCFC cell materials is one topic which is to be addressed by this research.

Underground Coal Gasification

Question: According to your budget (pg. 81) for underground coal gasification, work still needs to be done to monitor activities at previous test sites to comply with federal and state laws. How do you propose to do this monitoring when you request no money for underground coal gasification in FY 1987?

Answer: Necessary monitoring of past test sites will be covered in FY 1987 with prior year funds.

Question: According to your budget (pg. 82), you will have completed the second year of the three year effort to establish a technology base for application of Underground Coal Gasification to subbituminous coals sufficient to launch industrial process development. Since you are not proposing to finish the third year, what happens to this technology?

Answer: This test is being over 50 percent co-funded by an industrial consortium. The DOE funds for the test (which will take place in late FY 1987) are those that have been appropriated in prior years. While some program modification may be required, funds appear sufficient to conduct a viable test. Industry has also shown some willingness to share a larger portion of the burden of funding in selected areas.

Magnetohydrodynamics (MHD)

Question: Your budget (pg. 87) indicates that the private sector will continue the MHD work without the government's participation. That is not what they tell us. What makes you believe they will pick up this work?

Answer: The Federal government has invested over one half billion dollars for the development of MHD power systems technology. The technology has progressed to the proof-of-concept testing stage, which is estimated to be within three years of commercial demonstration and requires an additional $90 million. The Department believes that by making available to the private sector the government-owned equipment and facilities the private sector will have a sufficient basis to proceed with commercial development.

Question: I understand MHD could have some Star War applications. Is this true and if so what sorts of applications?

Answer: The MHD technology being developed for military applications requires short duration pulses from a power train. This type of system bears very little resemblance to the power train component of a coal-fired MHD system. This technology is distinctly different than the Department's MHD program which is focused exclusively in the development of coal-fired systems for the generation of electric power.

Question: Has DOD expressed any interest in the MHD technology?

Answer: Fossil Energy and the Pittsburgh Energy Technology Center (PETC) have recently signed an interagency agreement with the Strategic Defense Initiative Organization (SDIO) under which PETC will conduct a feasibility assessment program for space-based, multi-megawatt MHD power systems for SDI applications. This effort will be conducted over a period of 6 years.

Petroleum

Question: Could you elaborate on your Arctic and offshore research effort?

Answer: The major thrust of the Arctic and Offshore research program is to establish a coordinated, energy related data base readily accessible by the research community. In this regard, Fossil Energy is developing an annotated bibliography reflecting available publications to date and establishing a data base network whereby existing data repositories can be linked and accessed. The other research thrust in the program is somewhat broader in that it involves setting up mechanisms whereby impediments to energy development can be identified and coordination of resources (Federal government, State governments, Foreign countries, industry and universities) affected to address the problems. This is done through Memorandums of Understanding (MOU) and attendant Annexes defining specific technical problems. Currently, we have MOU's with the State of Alaska and Canada. Prior year funding has been leveraged by cost sharing identified key projects. This program lends itself to a Cooperative R&D Venture pool approach.

Question: As I read your budget justification (pg. 109) which mentions the tremendous resource of discovered, but unproduced oil and the National Petroleum Council report which concludes that "only through continued process research and field testing with both industry and government support can the large volume of hydrocarbons discussed in the report be produced," I am curious as to why you are cutting by more than half your research in Enhanced Oil Recovery?

Answer: The reduced level of funds requested for direct FY 1987 Enhanced Oil Recovery research reflects both the need to reduce controllable non-Defense expenditures and the objective of more deeply involving the knowledgable private sector in planning, prioritizing and directing required extractive fossil energy research through the Cooperative Venture R&D Pool. It is anticipated that the required process research and field testing of EOR concepts will be undertaken through both the direct EOR technical base program request of $4,484,000 in FY 1987 and the Venture Pool proposed in FY 1987 if industry determines a need for additional EOR research.

Question: Will your budget accommodate continued participation at some level in the work going on in Canada, Venezuela and Mexico in support of Enhanced Oil Recovery? If not, will we have access to their research?

Answer: In FY 1987, it is anticipated that NIPER will expand its role in performing/sharing and otherwise cooperating in EOR research with Venezuela, Mexico and Canada.

Question: What are the environmental problems associated with Enhanced Oil Recovery?

Answer: The principal environmental concern in EOR is the potential for underground strata and groundwater contamination resulting from the injection of "foreign" fluids (chemicals, gases, etc.) and microbes (as in MEOR) and their aging and long-term reactions and migration underground. Such potentials require monitoring procedures and could require neutralization injections or other treatment. In addition, environmental diligence is required in handling surface spills, and separation and disposal of brines and other matters produced with crude.

Question: According to your budget (pg. 111) a great deal of basic research is still needed in Enhanced Oil Recovery. Will that work be done in this budget?

Answer: NIPER will continue fundamental studies of mobility control mechanisms of steam/flood additions using one- and two-dimensional physical models, and correlations of heavy oil and reservoir properties with steam additive characteristics. These efforts will further meet the needs of Heavy Oil basic EOR research.

Question: As I read your budget (pg. 112) the U.S. will only continue to participate in cooperative research with Canada, Mexico and Venezuela if funding is provided under the Cooperative Venture program. Aren't these international programs a good way to leverage our research dollars and shouldn't this activity be continued at some level?

Answer: These programs do leverage DOE research dollars in that they are principally task-shared or otherwise joint, cooperative research efforts where the U.S. contribution is generally 50 percent or less. Accordingly, it is anticipated these will fit appropriately under the Cooperative Venture program or will be carried out through our research program with NIPER.

Question: While the Enhanced Oil Recovery Program is being cut by almost two-thirds only one FTE is being cut. Why is this?

Answer: Direct FTE's for EOR will be reduced from 6 in FY 1986 to 3 in FY 1987, a 50 percent reduction. Indirect FTE's for EOR will decline from 17 to 10, a 40 percent reduction. Thus, total EOR FTE's will be cut by 10, from 23 in FY 1986 to 13 in FY 1987, a reduction of almost 44 percent.

Question: For the record could you provide a breakdown of your FY 1986 and proposed FY 1987 budget by eastern and western oil shale research? Also for the record please provide a breakdown of your proposed reductions as they affect eastern and western shale research.

Answer: The FY 1986 and FY 1987 funding profile for Oil Shale activities is as follows:

FY 1986 Budget Authority
($ in thousands)

	Eastern	Western	Total
In-House R&D	0	0	0
"Defederalized" Energy Technology Centers	1,345	2,623	3,968
National Laboratories	1,000	2,631	3,631
Other Federal Agencies	0	99	99
Universities	288	192	480
Industry	3,958	0	3,958
Total	6,591	5,545	12,136

FY 1987 Budget Authority
($ in thousands)

	Eastern	Western	Total
In-House R&D	822	822	1,644
"Defederalized" Energy Technology Centers	0	0	0
National Laboratories	0	0	0
Other Federal Agencies	0	0	0
Universities	0	0	0
Industry	250	1,701	1,951
Total	1,072	2,523	3,595

As can be observed by comparison of FY 1986 vs. FY 1987 funding proposals, the proposed reductions are $4,777,000 in western shale research and $3,764,000 in eastern shale research. The major changes are completion of the WRI cooperative agreement in FY 1986 and termination of all work at the National Laboratories. Offsetting these reductions are requested funds to complete some eastern research contracts initiated in late FY 1985 for which FY 1986 funds were not requested.

Question: Over the history of the oil shale research program how much has gone to eastern vs. western shale?

Answer: Over the history of DOE's oil shale research program prior to FY 1985, an estimated $18 million had been spent on eastern shales research and approximately $164 million on western shale.

Question: Your budget mentions the environmental problems associated with oil shale, yet you propose to all but eliminate research on environmental mitigation. Why is that?

Answer: Most of DOE's oil shale environmental mitigation research has been performed within the National Laboratories and through the cooperative agreement with the Western Research Institute (WRI) that concludes at the end of FY 1986. Much of this work has reached or will reach logical points for deferral of further activity beyond FY 1986 pending possible proposals under the venture pool scenario. For instance, a major review of the needs associated with the establishment of engineering-scale solid waste research has been recently completed by METC/LPO. This type of research could readily fit within the new venture pool format, as could research related to in-situ retort abandonment. Los Alamos National Laboratory (LANL) is scheduled to complete a study this year of siting methodology research needs based in part on results of a workshop hosted by LANL in early FY 1986. This study could provide the basis for new research proposals in future fiscal years by either DOE or venture pool groups.

Question: In light of the severe cuts in the overall Fossil Energy Research and Development budget for FY 1987, how does DOE plan on funding the continuing programs for petroleum research? In particular, how does DOE plan on funding the programs for Enhanced Oil Recovery research?

Answer: The Department has requested $9,890,000 in the FY 1987 Fossil Energy R&D budget for continuing programs related to petroleum research. The list of major activities in the petroleum area that are included in the budget request and continuing from FY 1986 to FY 1987 is listed below. In addition, $12,500,000 is requested for the new Cooperative R&D Venture Pool to fund applied research in the Fossil Energy extraction technologies which include the petroleum programs.

($ in thousands)

	Adjusted[1/] FY 1986	FY 1987
Advanced Process Technology		
o Fundamental petroleum research at NIPER	$1,927	$1,500
o Arctic/offshore oil and gas research data base	839	235
Enhanced Oil Recovery		
o Post-field test analyses of EOR trials and studies of geologic heterogeneities	1,537	1,100
Oil Shale		
o Eastern oil shale research	1,922	1,450
o Reference shales characterization and experiments	2,192	1,201

[1/] Adjusted by 0.6% general reduction and approximately 3.9% for Gramm-Rudman-Hollings.

More specifically, in EOR, heavy oil research will be focused at the National Institute for Petroleum and Energy Research (NIPER) to identify additives for improving thermal recovery methods and investigation of the mechanisms to enable design of improved techniques. Efforts to continue the use of physical models and mathematical simulation to evaluate steam flooding and in-situ combustion in terms of kinetics, rheology, and displacement process are also planned. Light oil research will also be conducted through NIPER and will allow the continuation of fundamental research into the recovery mechanisms and physical and chemical phenomena which hold the residual oil in the reservoir and prevent displacement. In addition to efforts conducted by NIPER, in-house efforts conducted at METC, selected industrial efforts, and selected international cooperative efforts will also continue in FY 1987. These efforts will be funded through the FY 1987 budget request for EOR of $4,484,000. Additional funding may be available through the Cooperative R&D Venture Pool if industry determines that there is a need for further EOR technology development.

Question: What are DOE's plans for defederalization?

Answer: As part of the Administration's effort to defederalize government functions which should more properly be performed by the private sector, the following activities have been identified as candidates for divestiture:

- Power Marketing Administrations
- Naval Petroleum Reserves
- AVLIS Uranium Enrichment Technology
- National Institute for Petroleum and Energy Research (NIPER) Facility

Question: What kind of schedule is DOE looking at?

Answer: Preliminary analysis and planning have begun to identify overall issues concerning divestiture, however, no formal schedules have been developed.

Question: How do these plans specifically affect petroleum research?

Answer: With regard to those plans affecting petroleum research, the only facility currently being considered for divestiture is the NIPER facility. While it is expected that ownership of this facility will eventually be transferred to the private sector, no specific studies or analyses have been conducted at this time concerning the potential impact on the petroleum research. Once ownership is transferred, the entity would be in a position to compete for public and private funding for petroleum research.

Question: As part of the continuing effort to defederalize DOE fossil energy laboratories, wouldn't it be in the best interest of DOE and the Administration to extend the current agreement with NIPER and include in this new agreement all of the provisions that were granted to WRI and UNDERC?

Answer: Unlike WRI or UNDERC cooperative agreements which were due to expire on September 30 and March 31 of 1986, respectively, the

NIPER cooperative agreement is currently projected to continue until September of 1988. Since the current agreement with NIPER has approximately two and one-half years remaining before it expires, it is premature to consider extending the current agreement at this time. As part of the divestiture plan, one option could be the transfer of all property via legislation as was the case for WRI and UNDERC.

Gas

Question: Your budget for gas research is cut in half yet you propose continuing the program at the same staffing level. Why is that?

Answer: Direct FTE's for the Gas Program will be reduced from 11 in FY 1986 to 10 in FY 1987, a 9 percent reduction. Indirect FTE's for the Gas Program will decline from 11 to 10, a 9 percent reduction. Thus, total Gas FTE's will be cut by 2, from 22 to 20 in FY 1987. In addition, although the budget is cut in half, the program and project management work loads are not expected to decrease substantially. Also, much of the research effort reduced or terminated under the FY 1987 budget request will be performed in-house at the Morgantown Energy Technology Center. The in-house research effort will focus on reservoir/stimulation modeling, particular model verification, and on various geoscience related activities.

Cooperative Venture

Question: As I read your budget it would appear that you are assuming a lot of ongoing DOE work could qualify for the Cooperative Venture program yet there is only $12.5 million in the budget for this activity. For the record would you provide a listing of everything mentioned in your budget that you think could compete under this program and include current funding levels for this work?

Answer: The Cooperative R&D Ventures Pool pilot program is primarily directed toward the extraction technologies in the Office of Oil, Gas, Shale and Coal Liquefaction and accordingly relate principally to Oil Shale, Oil Recovery, Gas Recovery, and Underground Coal Gasification. While other technologies are not excluded, it is planned to focus on the extraction technologies in FY 1987 and perhaps expand to other areas in later years as the feasibility and the cooperative R&D venture pool concept becomes established.

The funding for the program follows (in addition to the venture pool funding):

(In Thousands)

	FY 1986	FY 1987
EOR	11,454	4,484
UGR	8,503	5,252
OS	12,136	3,595
UCG	4,072	-0-
	36,165	13,331

Question: Given DOE's history, i.e., the MHD example, what confidence will the private sector have that DOE's commitment will be there year to year?

Answer: The private sector is well aware of the dynamic nature of the Federal budget process and recognizes that changes have occurred and are likely to continue to occur from year to year. However, the cooperative R&D venture program has features that should attract the participation of industry in nominating ventures most likely to attract industrial interest. It has features that address national energy, technology and trade goals of the U.S. With these features and the Administration's support, industry's confidence is expected to be higher for this effort.

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